USER AND PROVIDER PERCEPTIONS OF SERVICE QUALITY:

AN EXPLORATORY STUDY OF A PROFESSIONAL SERVICE

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ABSTRACT

This study looks at service quality and its evaluation from users' and providers' perspectives. Applied research is conducted in a hospital diagnostic service, largely because of the high level of interest in issues of quality, and the technical and professional nature within the service.

The focus of the study is on examining the development of conceptual frameworks of service quality and carrying out research on service quality in an operational setting. Both qualitative and quantitative research methods are used in this exploratory study. A survey of expectations and perceptions of service quality features is carried out on 74 customers and 7 providers of the service.

Written and verbal comments on areas in which service quality may be improved from both groups are collated and coded. A series of survey statements is developed from the literature and from preliminary interviews as indicators of service quality features. Perceptions of customers are examined in relation to both the critical features of the service and perceptions on how the service performed in relation to each feature. The gap analysis is used to compare the views of the provider group with those of the customer group.

The findings demonstrate that there are several areas where views are similar between providers and customers. In addition, areas are identified where differences exist between the importance ratings for service quality features and the evaluation of performance of the service in relation to these features. Factors which may influence the extent to which these differences exist are presented. It is suggested that a major reason for these differences is a lack of understanding of the evaluation of service quality and the importance of this evaluation on the strategic positioning of the service.

It is concluded that although attention to clinical aspects of quality is important, a heightened awareness of the importance of service quality is needed by health service providers. Action taken by service providers to identify critical quality features and evaluate performance in relation to these features, can create opportunities for increased levels of customer satisfaction and the consequent likelihood of successful adaptation to changing environmental demands.

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CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

Service quality is associated with the idea that creating customer satisfaction is the central focus of every business practice. Customer satisfaction means making sure that customers' perceptions always exceeds their expectations of the service. Service quality involves elements of the service considered important to customers or what the customer expects from the service. Service quality can be evaluated based on the extent of discrepancy between customers' expectations or desires and their perceptions.

The manager's critical task, says Drucker (1974), is to continually reassess the organisation's current and future positioning in relation to the customer. All firms - public and private, profit and not-for-profit, - should examine how their customers define value and how the service is perceived in relation to their competition (Drucker 1974).

Service firms that consistently concentrate efforts to plan, improve and evaluate their service quality are those that are likely to continue to provide jobs, create new and satisfy existing customers and withstand environmental and organisational pressures.

Only recently service quality and customer satisfaction have gained considerable recognition as the key to success in service firms. Specific factors have contributed to this new 'enlightenment' in service firms. New Zealand service managers are in the midst of a wave of economic and social changes based on a deregulated market system and these changes, along with increased consumerism, are making managers of service firms reevaluate their service strategy.

Methods used by managers of service firms to address cost constraints and increased competition include financial management and cost cutting strategies. For example, a common way in which managers in service industries have responded to changing economic conditions is by emphasising financial aspects of the service and focusing on efficiency and productivity improvement. Restructuring, trimming staff, or cutting services are common methods which have been undertaken to reduce the costs of providing services.

Another strategy adopted by service firms is the use of advertising and sales strategy. Limitations have been recognised in utilising these strategies since customers who were gained through aggressive marketing techniques were sometimes lost due to the inability of the service firm to maintain positive long term customer-provider relationships. It is generally acknowledged that due to increased levels of competition, it is important to assume strategies that both attract new customers and maintain existing ones.

Organisations will continue to miss opportunities to reduce waste and reduce workload unless improving service quality is recognised as a fundamental strategic goal of the organisation. As Juran (1980) states, quality planning, quality improvement and quality control require leadership and investment of organisational resources. Resources invested on improving quality will be wasted if efforts are not built into the processes, technology and systems in the organisation.

Work that has undertaken to identify and influence customer expectations has in the past, been considered a peripheral issue in service industries. This view is changing. In recent times attention is being paid to strengthening customer relationships and retaining customer loyalty. Service managers are concentrating on evaluating the service performance in relation to customer perceptions of service quality.

Evidence suggests that service quality is increasingly considered important by managers of service firms. Service is identified as the top concern of executives who where polled in a 1987 Fortune magazine survey. The executives were asked how they would improve service quality. Approximately 85 per cent of the executives identified increased employee motivation, change in corporate culture and top management emphasis on quality when providing services (Wren, 1989).

A trend seen in recent times is that customers are providing greater levels of feedback on the service exchange. Customers are increasingly expressing complaints, frustration and dissatisfaction with experiences in service industries (Koepp 1987). With the rise in consumerism, it is considered important to manage the customer-service exchange relationship and focus on enhancing the features of the service which are viewed as important by the customer.

Despite the importance of customer satisfaction and service quality it has become apparent that a practical understanding of these concepts have been missing in private, non-profit and public service organisations. Although these concepts may be considered important, there appears to be a limited understanding of the attributes of the service exchange relationship which are important to the customer and which service features contribute to enhancing service quality.

The evaluation and management of service quality can help private, non-profit and public service firms to become more accountable to their customers and to gain positive customer response about the service offering.

This study looks at the concept of service quality and how it differs from common approaches to addressing quality issues in health care. Improving service quality involves efforts to identify those constraints that block the ability of service providers to satisfy customers. Service quality requires a long term orientation. The long term orientation is needed to maintain the focus on current and future

expectations of the customer toward the service firm. This study explores the concept of service quality and its application in an operational setting.

Understanding customer expectations in respect of service and measuring user and provider perceptions of service quality enables service firms to better integrate the organisation's capabilities to meet these expectations. The study concentrates on applying the concept of service quality to the organisational and environmental context of a public health service. Current methods to assess quality in health services in general are reviewed. Issues are then identified that impact on the ability of the service to maintain a service quality focus.

Through exploratory research, service quality features are defined and then the service is evaluated. The evaluation focuses on customer perceptions of performance of the service based on service quality features. The study attempts to identify areas where investment may be necessary to improve service quality. The discussion highlights the fact that to improve service quality, managers need to identify factors which enhance the ability of service providers to satisfy customers. Potential barriers to addressing service quality within the operational context of the public health service are identified.

1.2 OBJECTIVES

There are five primary objectives of this study. The first objective is to describe conceptual developments in the understanding of service quality. The second is to examine the relevancy of the management of service quality in the health sector. The third objective includes conducting exploratory research on service quality in an operational setting. The study will then describe the extent to which the service quality approach is applicable in the public health sector. The final objective of this study is to identify issues relating to the management of service quality that need further study.

1.3 CHAPTER OVERVIEW

This thesis is based on the assumption that improving service quality needs to be recognised as a fundamental organisational goal in the public health sector. As an exploratory study, the intention is to tie together themes from managerial and health service literature and to look at how previous research and conceptual developments can help to address the practical realities of managing aspects of service quality.

The second chapter establishes the basis for focusing on service quality. The study's purpose is defined and then examples of related studies from industrial marketing, health service and private service industries are highlighted. The significance and relevancy of the study in the public health sector is then discussed. The relevancy of the study is based on strategic issues and characteristics of the health service that support the need for managers to better understand and address service quality issues.

The third chapter reviews terms and conceptual developments relating to service quality. For example, the use of the term customer is explained and characteristics of services are described. Much of the initial research on quality was carried out in manufacturing and product oriented firms. The discussion addresses the development of new approaches to examining service quality. The concepts of perceived service quality and the gap analysis of perceived service quality is then reviewed.

Having established the conceptual framework for examining service quality, the study will turn to identify methods currently used in the health industry to address issues relating to health care quality. A number of approaches have been used in the health care industry to evaluate quality. Some of the more common approaches to address health care quality assurance are reviewed such as audits of standards of professional practice, accreditation reviews, clinical reviews and measures of health outcomes.

Although there have been numerous approaches to addressing health care quality, it is suggested that limited work has been done which demonstrates linkages between activities carried out under the umbrella of quality assurance and needs of health service managers. In addition, little work has been done that relates outcomes of studies into quality assurance with the strategic positioning of the health service within the environmental context. Due to the prevalence of quality assurance activities and their associated costs, it is important for health service managers to understand possible limitations associated with these activities. Chapter 3 reviews common practices associated with quality assurance in health care.

The study has, to this point, looked at concepts of service quality and quality assurance in health care. Service quality is defined on the basis of discrepancies between customer expectation and perceptions of the service offering. It is suggested that the service quality approach is distinct from traditional approaches addressing health care quality assurance.

When addressing issues of service quality, it is necessary for managers to understand unique characteristics and possible constraints that impact on the organisation's capability to deliver service quality as perceived by the customer. In Chapter 5 a examination is carried out of characteristics of the industry that may influence the level of perceived quality of the service. These factors relate to a variety of service dimensions including communication, access, competence, etc. Factors impacting on the future direction in the management of service quality in the ultrasound services are highlighted.

The previous chapters define service quality as an organisational goal and outlines characteristics of the internal and external environment which impact on the extent to which the goal is likely to be reached. To this end, the previous chapters look at a conceptual framework of service quality, health care quality assurance and trends in the management of ultrasound services. Chapters 6 and 7 concentrate on the research on

the concept of service quality conducted in an operational setting. The investigation focuses on customer expectations and perceptions of service quality. Chapter 6 introduces the practical research on service quality carried out on the ultrasound service of a public hospital. The development, design and testing of the survey and sample size are reviewed. The research methodology is the focus of Chapter 6.

In Chapter 7 the research findings are presented. This section reviews the demographic profile of the respondents, outlines common referrals to ultrasound and then presents the findings of the survey on service quality features. For the purpose of analysis, service features were coded into three major areas including managerial, clinical and patient related issues. Features of highest importance to customers are identified. The gap analysis is used to examine individual expectation (importance) and perception (agreement) ratings.

Key issues identified in the research are examined in Chapter 8. Areas requiring management attention are addressed. The discussion looks at factors that both facilitate and create barriers to the management of service quality. Issues that need to be addressed in order to overcome service quality barriers are identified. Areas for future studies on health service quality and managerial research are recommended.

CHAPTER 2
RATIONALE FOR SERVICE QUALITY APPROACH

2.1 INTRODUCTION

The interest in customer satisfaction and service quality has grown out of studies of organisational development, management research, and operations management. Organisational research is increasingly recognising the importance of focusing on the customer when examining the complex operational and strategic issues that must be resolved and managed by the service firm (Peters and Waterman 1982; Gronross 1982). Managing the features of the service which provide sustainable superior value for customers, assists in better targeting of business activities as well as contributing to long run superior performance of the firm (Peters and Austin 1985; Peters and Waterman 1982; Shapiro 1984).

Developments in industrial research support the notion that managers need to know and understand customer sensitivity to attributes of the service, and differentiate the service along those attributes considered most important. Firms which have taken a quality approach to problem solving have found improved levels of customer satisfaction, improved employee morale; reduced waste and costs, and increased productivity (Crosby 1979).

The customer focus is important however it is difficult to understand the practical management implications of maintaining the customer orientation when facing operational and strategic issues of service firms. Organisational researchers have contributed to the understanding of what it means to maintain the customer focus. The findings of studies carried out by Peters and Waterman (1982) of 'successful' organisations suggest three ways that managers may incorporate the customer focus into their operating principles.

Conclusions from their investigations of successful service organisations indicate that the customer focus needs to permeate every aspect of the service

organisation; improving service quality needs to be a continuous goal; and the long term position of the organisation in satisfying key customers and maintaining customer loyalty must be incorporated and communicated in the goals of the service organisation.

Service providers must find ways to define and differentiate their service offering, and create customer satisfaction in order to ensure long term viability. A critical element in the management of service firms is the focus on quality as defined by the customer. Once the quality elements are defined, management systems need to be developed and monitored to ensure customers are satisfied with the service offering.

The literature indicates that concepts of quality are vast and the term is used in a number of different ways, frequently being associated with notions of goodness, accuracy, precision, etc. The term quality is conceived from different perspectives and used in different circumstances. In relation to the management of services, there is a need to have an understanding of the concept of service quality, its meaning and a framework for analysis. In this study, the concept of service quality addresses the issue of continually meeting or exceeding the customer's expectation of the service offering. The evaluation of service quality involves measurement of customer expectation and customer satisfaction of the service offering. Regardless of how competent, proficient or technically advanced the professional staff of the service operation are, the "quality" of the service is how well it meets the customer's need (James, 1989).

The literature suggests that a greater managerial understanding of the evaluation of service quality would aid service firms to effectively adapt to economic and environmental changes. In order to understand what management of service firms can do to enhance service quality, the following discussion will highlight the background and the development of service quality conceptual frameworks.

2.2 THE PURPOSE

A public health service is selected as the industry in which the practical research will be carried out. The ultrasound service in a public hospital is chosen as the study's focus. The ultrasound service takes referrals from hospital and community based medical practitioners. The staff provide technical support in carrying out diagnostic procedures on patients, interpreting examinations and providing information and advice to aid in the therapeutic intervention of the patient. The providers in ultrasound offer a service that is highly technical and specialised in its nature.

Despite the importance of service quality, a great deal of confusion continues to exist amongst scholars, service managers and practising professionals, over what features of the service encounter are important from the customer viewpoint and how features are perceived by the customer. This study seeks first to examine the concept of service quality and then utilising theory and previous research, carry out a study of service quality in an operational setting. Characteristics of the service and approaches to evaluating quality in the service industry are reviewed. Conceptual developments for understanding service quality are highlighted.

Concentrating on customer and provider expectations and perceptions of service quality, the study will examine how service features are evaluated by users and providers. In focusing on service quality, the study attempts to identify areas where the service succeeds or fails to meet the expectations of the customers. In carrying out the study, areas for improving service processes, systems or facilities are identified. The findings provide insights into those areas where service quality may be enhanced.

2.3 RELATED STUDIES

It is important to consider how this study of user and provider perceptions of service quality relates to other studies carried out in the literature on marketing management and the health industry. Studies on features of quality have been carried out on the quality of manufactured goods and customer satisfaction in private-oriented service firms. Previous studies on service quality have largely concentrated in the private sector such as banking, hospitality, retailing, and information services (Parasuraman et al 1985; Lovelock 1988). Other studies have attempted to measure customer satisfaction of health services by measuring perceptions of patients and former patients of hospitals (Carmel 1988; Speedling et al 1983).

Research has been carried out utilising a variety of different methodologies addressing issues which have links with this study. For example, a great deal of research has been carried out looking at features of the service which are viewed as important by patients or former patients of health services. Other studies have addressed quality in professional services, primarily focusing on the individual doctor-patient exchange relationship. Industrial marketing studies have been carried out which address customer satisfaction of laboratory diagnostic services. The following discussion will highlight themes stemming from these related studies.

STUDIES ON SATISFACTION OF HEALTH SERVICES

Examining service quality involves evaluating dimensions of the service perceived as important by the service customer. Studies have been carried out which look at dimensions of the health service considered important to hospital patients. The health industry has been the subject of an increasing number of studies on customer satisfaction (French 1981; Levin 1986; Speedling et al 1983). Much of

the focus has been on the development and evaluation of indices of customer perceptions of the physical aspects, interpersonal relationships, and communications in hospitals.

Although a great deal of research into patient satisfaction has been carried out, little practical work has been done to link findings of customer satisfaction surveys in health to the strategic needs of the health service organisation. A review of literature on patient satisfaction by Ware et. al. (1978) found that methodological problems prevented the full utilization of information. Ware reports that two-thirds of the patient satisfaction surveys conducted in the previous twenty-five years employed a single-item measure and were overly restrictive. The surveys tended to lack reliability and validity.

There has been additional concern over what data should be obtained and how the data can be best utilized. For example, managers have questioned findings of patient satisfaction studies due to disputes over how the data should be interpreted (Shortell and Richardson 1978). Shortell and Richardson found that managers perceive survey processes and results as burdensome and threatening.

STUDIES ON SATISFACTION OF PROFESSIONAL SERVICES

Other studies have explored the unique characteristics of service quality in professional as opposed to nonprofessional services. As the particular industry being studied would be considered a highly professional service, studies of professional service quality are related to the present study. Professional services can, to a limited extent, be distinguished from non professional services.

It is a matter of debate whether some services are classified as professional or nonprofessional. This is due to the somewhat generalised and simplistic nature of the distinctions between the terms. Professionals typically hold a specialised body of training and knowledge and have an individual code of ethical principles. Professionals also hold some degree of control over standards and conditions of

practice, and operate while utilising a certain degree of judgement in their service offering. The professional versus non-professional distinction has been carried out in a sumative fashion representing specific characteristics based in the context of individual societies.

In relation to professional service quality, research has been carried out on the processes involved with customer selection of professional services and marketing strategies for professional services in general (Kotler 1980; Bloom 1981; Quelch 1981; Harris 1981). These studies have primarily focused on the development of advertising strategy when evaluating factors associated with client selection of legal services and patient selection of dentist services. These studies have largely concentrated on individual transactions between professionals and their customers.

Concentrating on the relationship between a professional physician and his/her patient, Brown and Swartz (1989) identify elements within an individual transaction considered important to the patient. Examples include physician interactions, staff interest and availability, etc. The study focused on the evaluation of individual service exchanges. The authors identified perceptual gaps in the evaluation of the service by physicians and their patients. Brown and Swartz recommend that further research be carried out to evaluate professional service quality, particularly to explore the impact of the multiplicity of interpersonal contacts on the service evaluation process.

INDUSTRIAL MARKETING STUDIES

Other contributions to theoretical developments in the area of service quality stem from industrial research on the supplier-customer relationship. Industrial marketing studies may be relevant since providers of health service share some common characteristics of industrial suppliers of services. For example, industrial customers (e.g. medical practitioners) purchase goods or services in order to carry out the operations of a business (e.g General Practice). Research demonstrates that evaluations of supply alternatives by an organizational buyer are similar to

benefits sought by the customer. The following is an example of one such study carried out on clinical laboratory services in the health industry.

A study has been carried out which demonstrates the benefits of using marketing research to identify strategies necessary to facilitate the management of clinical laboratory services (Green and Wind 1982). The study looks at supply alternatives for a clinical laboratory in the health industry. The aim of the research was to assess how physicians subjectively value various characteristics of a clinical laboratory in deciding where to send their tests.

Physicians received 16 profiles of possible laboratory services. These profiles identified specific characteristics of utility functions such as reliability of test results, delivery procedures, convenience of location, range of services, turnaround time, and price. Based on the study's findings, management of the laboratory services began emphasising convenience factors in addition to its previous focus on test reliability.

The findings from this study are particularly relevant to the study of ultrasound diagnostic services as both services have medical practitioners as their primary customer and both provide information for use in clinical decision-making regarding treatment options.

As discussed, previous studies have looked at patient satisfaction of hospital services and the evaluation of individual transactions between the medical practitioner and the patient. In addition, studies have focused on medical practitioner satisfaction of diagnostic laboratory services. Service quality studies within an organisational context have been carried out in competitive service environments such as the banking and hospitality industries. This study builds on these various approaches to look at gaps between provider and customer expectations and perceptions of service quality within the organisational and environmental context of a public health setting.

2.4 SIGNIFICANCE OF THE STUDY

This study is significant in a number of ways. To date little research has been carried out on evaluating perceptions and experiences of service quality in professional services, the public sector or health industry. In addition, little work on service quality has been carried out within a profession or between professionals, particularly in New Zealand.

Recent studies in the service quality area have largely emphasized the development of conceptual theories, have utilized divergent groups as the basis for the study, and have based their work on ad hoc definitions (Murray and Schlacter 1990). There is a need for research that examines service quality in an operational setting, incorporating experimental studies where replication and validation is possible (Rossi, Freeman and Wright 1979; Stiff and Gleason, 1981).

Research is needed on service quality within individual industries since customer perceptions of, and satisfaction with service quality affect the likelihood of current and future interactions with the service. To this end, this study will focus on a specific group of providers and customers of one service and will use a data collection process which has scope for further replication.

The study attempts to build on traditional customer research carried in the manufactured goods industries (Oliver 1979; Brown and Fern 1981) and more recently the contributions from customer and organisational research in service industries on service quality (Brown and Swartz 1989; Heskett 1987; Bowen and Schneider 1988; Parasuraman et al 1988).

The service quality approach is relatively new in the health industry however there have been a number of other more traditional approaches used to address health care quality. The following section provides a brief overview of common approaches used in addressing the issue of health care quality. Features and

trends in the health industry as well as characteristics of the ultrasound service are assessed to determine reasons that it may be important for managers to focus on service quality.

2.5 RELEVANCY IN THE HEALTH SECTOR

The organisational and environmental context of the health industry is particulary complex. Characteristics of the organisation and characteristics of the environment in which health services are provided contribute to this complexity and impact on the ability of managers to facilitate service quality. Factors in the operational environment of the health industry will be described which contribute to the relevancy of this study.

In the health service industry, concepts and definitions of quality have largely been defined by the health service provider. Although quality is defined in a number of ways such as fitness for use, adherence to standards, conformance to specifications, etc., importance has recently been placed on including the customer in definitions of service quality. It is suggested that new approaches to addressing quality are needed in the health industry, that have as the fundamental theme of the definition, the customer as the focus.

The public health service and more specifically, the ultrasound service has unique characteristics which make a study of service quality particularly interesting. The public health sector in New Zealand is undergoing a great deal of change. New management approaches in the public health sector require increased utilisation of rationalist decision-making processes and the use of management information. Outcomes of these changes may include evaluating the performance of health professionals and the health service in relation to quality and increased managerial requirements for addressing quality dimensions of health services in general.

It is widely accepted that health professionals have extremely high regard for the quality of patient care. Professional groups have demonstrated an interest in

monitoring clinical practice. For example, professional ethics and training provide a context in which health professionals place high consideration on issues surrounding the quality of health care. Activities carried out on a formal and informal basis in health service industries such as reviewing patient care practices, attending clinical review meetings and addressing quality issues in individual practice, demonstrate the high level of concern for health care quality.

Formal enquiries into patient care, peer review, medical, nursing, or professional audits and accreditation are examples of formalised initiatives that are carried out to address issues of health service quality. An examination of the literature on health service quality shows that a great deal of attention has been given to clinical aspects of quality, focusing on identifying and measuring clinical outcomes or monitoring professional standards.

It has been suggested that the objective of carrying out traditional formalised quality assurance activities have sometimes been unclear and costs and benefits from undertaking formal quality assurance practices have recently been questioned. In addition, while clinical aspects are important, the literature suggests that it is becoming necessary to adopt additional perspectives in viewing quality. New perspectives are needed which addresses the issue of ensuring a satisfactory provider-customer exchange relationship in the organisational and environmental context.

This study is relevant since little work has been carried out which examines 'customers' of public health services. In addition, research is needed to compare perceptions of both providers and customers of the service in the organisational context. This study gives attention to the health service customer as the focus in the following discussion.

RECOGNISING THE HEALTH SERVICE 'CUSTOMER'

In the public health sector the concept of customer is infrequently used. Rather than looking at customers of health services, emphasis is placed on the health provider-patient relationship. The service quality approach promotes the use of the term customer in an overall sense to describe those who have expectations in relation to services carried out in the health industry. In using this approach, the term customer may encompass not only patients who are beneficiaries of the service, but also the various individuals or groups who have expectations or receive services outside direct 'patient care.'

Including the customer in definitions of quality has, in the past, been given little attention in the health industry in general. Focusing on the customer of New Zealand public health services is a new approach and, because of this, there may be significant opportunities to identify areas for improvement.

Increased competition for the private and nonprofit dollar in the health service environment has made managers of health services pay attention to customer perspectives of service quality. Customers of the health services view quality differently and, based on the aspect of the health service being addressed, it is important to identify key customers and understand how they view quality. The strategic issues facing the health industry, require health service organisations to reexamine their definition of quality and to identify and define how their customers, including physicians, and payers or funding authorities, define quality.

Perry's 1988 article highlights the need for hospitals to focus on evaluating customer's expectations of health care quality. Perry states that "painstaking attention to meeting customer's definition of quality is being adopted at a growing number of hospitals (p 30)." Each aspect of the health service targets the needs of different customers. Service providers and managers need to understand the various quality dimensions of the service as perceived by the customer. Perry reviews perspectives of some key customers of health services.

When addressing issues which relate to the consumer or beneficiary of the health service, Perry suggests that one must remember that consumers judge quality of care-giving and other amenities as equally important as clinical aspects of quality Compared with consumers, physicians or medical practitioners who refer to hospital services emphasise medical excellence in defining quality of hospital services (Perry, 1988).

Hospital administrators would be concerned with the evaluation of quality by funding bodies or "payers" of hospital services. Perry states that the United States based Cleveland Clinic Foundation has conducted research since 1982 on payer (or funder) expectations of health service organisations. The research suggests that payers are most concerned with 'taking the guesswork out of buying medical care' (Perry, 1988).

Payers or funding authorities are not only concerned with costs of care and efficient billing systems, but are also interested in whether the patients or beneficiaries are satisfied with the health care they receive. Managers and health service providers in many hospitals are realising that the emphasis on clinical outcomes is insufficient and are seeking to discover what other aspects of quality customers expect and to design systems that meet those expectations.

ADOPTION OF A CORPORATE IDEOLOGY

There are a number of additional factors contributing to the relevancy of a study of service quality. The practical research is carried out in the public health service. Recently corporate ideology has been introduced into a system which has a tradition of being managed solely by health professionals. In recent times the service has seen a change from systems which were managed by a team of health professionals to generic management systems. The generic management systems and the corporate management framework emphasise the use of decision making processes based on rationally established goals and objectives.

The introduction of corporate ideology with an increased emphasis on identifying and obtaining value for money means that health services need to have measures of 'bottom-line' managerial performance based on specific critical indicators. As a result of this trend, there is increased pressure for decisions to be judged in economic terms emphasising heightened levels of accountability and efficiency. A study of the relationship between strategic development, performance and service quality is warranted in light of these pressures.

Changes in the way public health services are managed mean that conflicts may arise between traditional approaches to providing services which were judged to be appropriate by clinicians and new approaches that are based on rationalist thought that emphasise the use of specific, objective, quantifiable information. A study of customer expectations and perceptions undertaken through the use of objective, measurable research methodologies may be particularly relevant in light of these imposed changes in the management of public health services.

DIVERSITY AMONGST PROVIDER GROUP

Addressing service quality issues in the health sector requires the involvement of a number of divergent groups who hold responsibility for different aspects of the service, in order to gain commitment and a consensus of approach. Developing common approaches to solving quality problems in health service is difficult. The health sector incorporates a diverse range of services comprising workers with a variety of educational backgrounds and experience. The need to adopt more formal processes in addressing quality issues require that managers establish systems for ensuring the involvement of health services key individuals and groups.

In ultrasound for example, a number of autonomous groups are responsible for the technical aspects of the service including qualified and unqualified ultrasound technicians and radiologists; each with different training and expertise. In addition, the service typically caters for a number of students undergoing training in ultrasound. The findings of a study on ultrasound service quality may be useful

when one considers the diversity of staff involved with delivery of the service and the requirement that service development continues to enhance the quality aspects of the service as perceived by the customer.

PRESSURE STEMMING FROM COST CONSTRAINTS

Attention to service quality requires a long term focus on understanding customer's likely future demands for services. Funding cuts have been a reality in the public health service forcing providers to establish priorities for services. Due to advances in medical research and technical developments, there is continued pressure to keep up-to-date with technological trends, up-grade technical equipment and expand service offerings. Cost constraints in the midst of pressure to expand service offerings means that it is very important for service activities to be targeted at the likely future demands of customers.

DECENTRALISING SERVICES

Managers need to be aware of strategic issues which impact on the dimensions of the service judged as important by the customer. Changes in the economic environment impact on the way health services are funded and managed. There is strong likelihood that with encouragement of activities such as competitive tendering and private sector involvement in the industry, the size and role of the New Zealand public sector will shrink (Payne 1991). Services which were once centralised in New Zealand hospitals, may increasingly be provided from community based, privately operated facilities. Along with many areas of the health services, public hospital ultrasound services are likely to be impacted by these trends. The services may be impacted by changes in a number of ways.

Extant literature on radiology services indicates that because of enhanced sophistication in imaging procedures and equipment, community-based hospitals and general practitioner offices are carrying out greater numbers of imaging (ultrasound) procedures. With the increase in community based care in the

United States, ultrasound services which were once offered from hospitals, are now provided by out-of-hospital, privately operated practices or clinics (Robinson 1989).

As a result, the public hospital is faced with the competitive reality of medical practitioners owning medical support facilities. In fact the findings reported by Robinson (1989), in a study by the American College of Radiology shows that 60 percent of all American imaging studies are done outside of the hospital by non-radiologists. Similar patterns may be likely to occur in New Zealand.

PLANNING BASED ON FUTURE DEMANDS

Other characteristics of the ultrasound service make a study of service quality particularly interesting. Maintaining a customer focus requires the continued investigation of current and potential customer demands for services. Imaging (ultrasound) service is a major area of expansion in the health industry and new techniques (e.g. computer support) are continually being developed which extends diagnostic abilities. In hospitals, there are continued pressures to not only maintain existing imaging services, but also to expand service offerings. To ensure customer expectations are met, managers of hospital ultrasound services must continually be aware of new demands for services.

2.6 SUMMARY

Based on the literature and changes which are evidenced in the New Zealand public health system, it is necessary that managers of hospital ultrasound services have readily available information about customer needs and health service trends to effectively adapt to changing demands for health services. In order to develop and achieve performance objectives targeting health service quality, public hospital service managers will need to understand and address service quality issues in the

practice setting. A conceptual understanding of service quality is therefore necessary if health service managers wish to ensure services are developed which will be used by customers.

The literature has given considerable attention to the multidimensional concept of service quality, addressing the importance and complexity of the issues. Economic and environmental changes are likely to impose demands for managers to rationalise expenditure and streamline service offerings. Understanding service quality and developing management systems to deliver the kind of service customers expect can help managers to respond to changing environmental demands. In looking at service quality in public hospital ultrasound services, the key issues include the various possible definitions, the multiple constructs on which conceptual frameworks have been developed, and the state of existing managerial research.

CHAPTER 3
CONCEPTUAL DEVELOPMENTS OF SERVICE QUALITY THE LITERATURE

3.1 INTRODUCTION

With the rise in consumerism and increased competition for the health care dollar, service managers need to understand concepts of service quality. Managers can take advantage of recent developments in academic and practical research to identify methods to evaluate and enhance service quality. This discussion will examine three primary areas of development which have contributed to a conceptual understanding of service quality.

Significant contributions have been made from the analysis of quality in manufacturing industries, evaluation of consumer perception of quality dimensions and exploratory studies carried out in the private service industry. In the literature, the initial emphasis in examining service quality focused on applying the findings from studies in manufacturing industries to services. Another emphasis has focused on the evaluation of customer perception of dimensions of quality. The third area involves the development of conceptual frameworks focusing on features and customer perceptions of service quality and what managers can do to improve service quality.

In manufacturing industries, objective and rational approaches have been used in focusing on quality. Quality has been addressed through the development of quality specifications for manufactured goods and then ensuring the specifications are met through monitoring conformance to standards (Crosby, 1979). Limitations to the transference of findings from studies of manufactured goods to services have only recently been presented in the literature. These limitations are largely related to differences between measuring and evaluating quality in goods versus service industries.

industries and customer evaluations of service transactions. Attention is then given to exploratory studies carried out in the service sector on service quality.

IDENTIFYING THE CUSTOMER

In service organisations it is sometimes difficult to define the customer of the service process. When Perry (1988) describes the different customers of health services, the term customer refers to any individual or group who has expectations regarding the organisations' processes or outputs. This definition implies that each service area may have many customer groups and these customers may be internal or external to the service organisation.

In the ultrasound service for example, 'external' customers may include those individuals who receive the diagnostic service output such as medical practitioners who refer patients to the service. 'Internal' customers of the service may include individuals who receive outputs of service processes which contribute to the overall service package. Examples of internal customers may comprise those individuals who are part of the hospital, but outside the individual service area such as staff who work in patient records, information or finance areas.

Customers may also be categorised according to their involvement with the service delivery process. Customers may be involved with the service through paying for the service, participating in the service or benefiting from the service. Conflict may arise when developing customer priorities if the customer who pays, benefits from, or participates in the service are different individuals or groups.

Another distinction has been made in defining industrial customers versus individual consumers. Industrial customers have been described in the industrial marketing literature as those who purchase or consume goods and services necessary to produce other goods or services (Haas 1989). Purchases of 'industrial' services may be made in order to carry out the operations of the

individual's organisation or business. Industrial customers do not include those individual customers who buy goods and services for personal consumption.

In a sense, medical practitioners may be considered industrial customers since they use the ultrasound service in delivering an overall service package of patient health care. For example, a medical practitioner may send a patient to the ultrasound service as a part of the 'package' of diagnostic advice offered to the patient. Medical practitioners act as gatekeepers for patients to attend ultrasound since patients are unable to receive an ultrasound examination without a referral. In this study, patients who are referred to ultrasound are considered consumers or beneficiaries of the service. Defining the customer and involving the customer in the service offering is the basis for understanding approaches necessary to address service quality in ultrasound.

BUILDING ON STUDIES OF PRODUCT QUALITY

Much of the academic involvement in customer evaluation of quality pertains specifically to manufactured goods. In manufacturing, the quality of a product is a direct result of the inputs to production and the production process and can be evaluated according to these attributes (Crosby 1979). Quality attributes of manufactured goods are therefore a component of these inputs.

Quality of manufactured goods involves the measurement of organisational inputs including resources such as material, labour, information and equipment. Quality is ensured through monitoring and measuring the relationship between the inputs, their transformation through the production process, and the outputs. Changes in any one of these aspects of production may vary the level of quality of the output.

In manufacturing, the components of the production process are broken down into specific features and attributes and then evaluated by the customer. Quality attributes and product features are delineated and determined by staff and

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In manufacturing, the components of the production process are broken down into specific features and attributes and then evaluated by the customer. Quality attributes and product features are delineated and determined by staff and

management. Variations in the these quality characteristics are measured and monitored. The evaluation of product quality takes place through a comparison between customer expectation and product performance. Products are tangible in their nature, therefore product performance based on predetermined criteria is relatively easy to measure.

A number of methods have been used to identify quality criteria and measure the customer evaluation of the tangible aspects of manufactured goods. For example, customers use multiple cues when evaluating quality of goods and these cues relate to features such as style, colour, label, feel, package, brand name and price (Crosby 1979).

Once quality criteria are determined, specifications are developed and the concept of quality is then defined as conformance to specifications. Crosby suggests that product quality can be ensured through inspection, control and measurement throughout the production and delivery process. In defining quality as conformance to specifications, it is necessary for managers to have total control over the inputs to production.

The initial work on evaluating the quality of services applied findings from manufacturing to service industries (Enis and Roering 1981; Czepiel et al 1985). This is evidenced through the emphasis on developing service performance standards and then ensuring conformance to these standards. Service performance standards focus on identifiable and quantifiable service quality attributes which can be controlled and measured much like the attributes of product quality. Although used in a variety of service industries such as motel and restaurant chains, this approach has been found helpful, only to the extent that the inputs and the process of delivering services can be completely controlled by management.

The traditional method to evaluate standards of service quality with its product focus, has only limited contribution to the evaluation of quality features of service

operations (Shostack 1987). The reason for this is that due to the unique characteristics of services, managers are unable to totally control the inputs to the service and the service process.

Developing accurate specifications for services is much more difficult than for manufactured goods (Shostack 1987). Services are complex involving dynamic and interactive processes. The evaluation of service quality through developing, observing and measuring service standards neglects to recognise some of the basic features of services.

Services are based on processes. Problems arise when attempting to measure or assess quality since processes involve a variety of people and are dynamic in their nature, making them difficult to examine, inspect or replicate. In addition, service quality features may be a component of the design, modification or control aspect of the service process.

When focusing on standards, there is little recognition of social or psychological factors which influence the individuals involved in the provision of services. In emphasising the use of service standards, inadequate attention is given to the organisational and environmental factors which continually affect and shape the service offering. Standards are dependent on management defined outputs and leave little room for individual or external influences on the service process. It became evident that there was a need for multidimensional approaches to examine and evaluate the quality of services (Zeithaml 1981; Parasuraman et al 1985).

UNDERSTANDING SERVICES

The literature cites many definitions for services (Judd 1964; Rathmell 1974; Shostack 1977; Kotler 1980). One definition of a service which is commonly used is that of Kotler (1980) who states that services are a bundle of intangible

activities or benefits that are offered by one party to another. Since services are based on intangible exchanges, there is no ownership of a service. Services may or may not be tied to a physical product.

Many comparisons have been made between goods versus service firms. The literature emphasises the development of theoretical constructs, which demonstrate that services are conceptually different from goods and these differences lead to particular considerations for managers of service firms (Judd 1964; Rathmal 1966; Eiglier and Langeard 1977; Lovelock 1988; Parasuraman et al 1985).

Distinguishing similarities and differences in goods versus services industries has been accomplished to a limited degree of success. Services are based on intangible exchanges. Shostack (1985) emphasises that there are few pure service or product based firms. Therefore Shostack suggests that even manufacturing firms would benefit from examining characteristics of services and from evaluating aspects of service quality.

SERVICE CHARACTERISTICS

As distinguished from manufactured products, services are characterised by the participation of the customer in the service process. Each customer differs in relation to needs and requirements. The process of providing a service involves a number of dimensions of customer interaction. In addressing service quality, there must be an emphasis on the contact which takes place between the customer and the service provider.

Unlike the manufacturing industry where the product may be the focus, services must be evaluated as dynamic processes. Typically, services are intangible, immediate, and individual in their nature (Judd 1964; Rathmell 1974; Shostack 1977; Sasser, Olsen, and Wyckoff 1978).

Understandably, the number and diversity of service characteristics make services complex to analyse and make it difficult to find agreement as the best approach to evaluate or measure service quality. For example, since services are comprised of intangible components, it is more difficult for providers of services to quantify, inspect or find agreement on common units of measure of the output of the service (Parasuraman et al 1985).

When providing services, managers need to understand the transformation from the service offered by the provider to the outcome desired by the customer. The outcome of the service sought by the customer is the focus for the examination and evaluation of service quality. The involvement of the customer in the service process requires an emphasis on managing the exchange relationship between the service firm and the customer.

EVALUATION OF SERVICES

Whether an industry is in the business of producing products or services, the customer is still interested in obtaining benefits and satisfactions. Knowledge of service quality can help service firms to better align management strategy to enhance those features of the service which are judged to be important to the customer. In this pursuit, researchers have studied how customers evaluate services and have developed conceptual frameworks to better understand the management of service quality.

THE SATISFACTION CONTINUUM

The model of the satisfaction continuum and the service encounter is used to understand more fully how customers evaluate the service offering. The satisfaction continuum model looks at how customers evaluate services (Churchill and Surprenant 1982; Oliver 1980; Oliver and DeSarbo 1988; Swan 1983). The

concept of the satisfaction continuum is illustrated in Figure 3.1. The satisfaction continuum suggests that the outcome of the service encounter is evaluated by customers on a continuum of a degree of satisfaction or dissatisfaction.

Figure 3.1 The Satisfaction Continuum

Dissatisfaction - Satisfaction

Dissatisfaction	=	Customer Expectations > Customer Perceptions
Satisfaction	=	Customer Expectations = < Customer Perceptions

---

Reference: Brown and Swartz, 1988

In describing the satisfaction continuum, Cadotte, Woodruff and Jenkins (1987) believe that individual norms, based on experiences, are the foundation for determining the level of satisfaction in the service exchange relationship. A range of indifference may exist between the dimensions of satisfaction and dissatisfaction. The client experience must fall outside an acceptable range of performance before the experience is evaluated as positive or negative.

The individual evaluates the service encounter by comparing the service experience with some set of expectations. These expectations may be based on personal experience, observations, or information gained from outside sources such as others' experience. A comparison is carried out by the customer between expectations and experience which results in an assessment of the experience as equal to, better than, or worse than expectations.

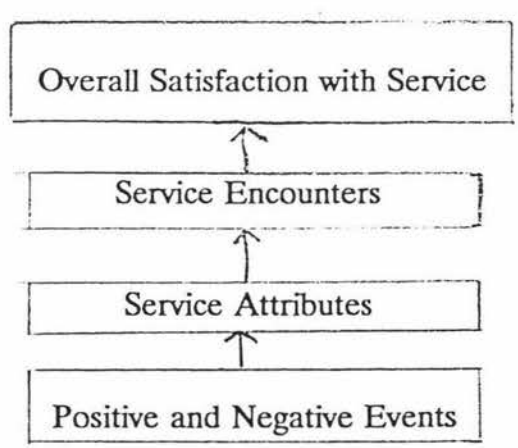
When the customer expectation is fulfilled, customer satisfaction is reached. When expectations are not met, the service is considered less than satisfactory.

If the expectations are exceeded, the service is considered more than satisfactory. The customer would be satisfied if the outcome meets or exceeds their expectations and dissatisfied if there is negative discrepancy between anticipated and actual outcome. Satisfaction is seen to be a psychological state which is finite in nature.

As compared with unidimensional rating scales, the breakthrough in this approach to evaluating quality was that individual differences can be accommodated across different subjects in examining the dimensions of service quality. The crucial difference in this approach is the recognition of the role that the customer plays in creating the service exchange relationship.

Constructs of the customer evaluation of the service exchange are based on research which focuses on a single transaction. Other research has looked in more detail at what factors influence the customers expectation and perception of the service as a whole. Figure 3.2 presents the possible relationship of events, attributes and encounters to satisfaction.

Figure 3.2 Hypothesised Relationship of Events, Attributes, and Encounters to Satisfaction



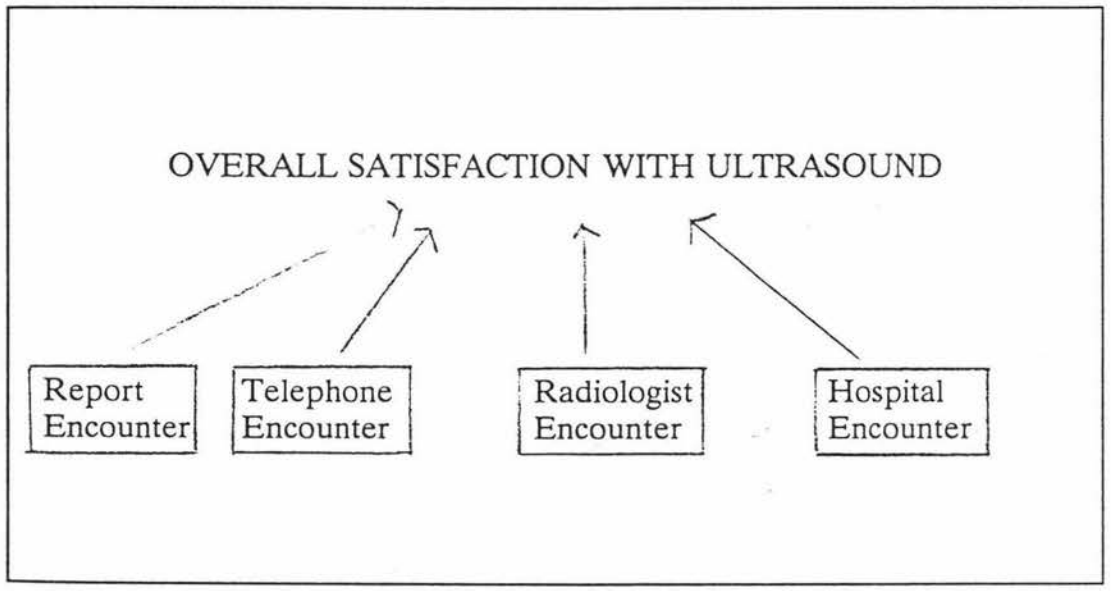
Source: Czepiel, 1985

THE SERVICE ENCOUNTER

Shostack (1985) defined the service encounter as the time during which the customer directly interacts with a service. This definition covers all aspects of the service with which the customer interacts during a given period of time.

Individual levels of customer satisfaction with the service encounter is a function of the level of satisfaction of the service attributes. Satisfaction with the service attributes is in turn dependent on the individual's experience with positive or negative events occurring during the service encounter. This relationship can be seen in Figure 3.3.

Figure 3.3 Hypothesised Model of Encounter-Based Satisfaction



Reference: Czepiel, 1985

Evaluating service quality emphasises the extent to which individual service encounters maintain and enhance the customer satisfaction since, in many cases, the individual service encounter is the basis for judging the service as a whole.

Service encounters have been described from differing perspectives, based on the analysis of the roles and interactions occurring between customers and service providers, and based on different dimensions of the service encounter. Characteristics and processes of service encounters are distinguishable from other interactions between individuals. Analysing the service encounter as a specific set of human behaviours creates opportunities for understanding how to design and improve service encounters (Solomon et al 1984).

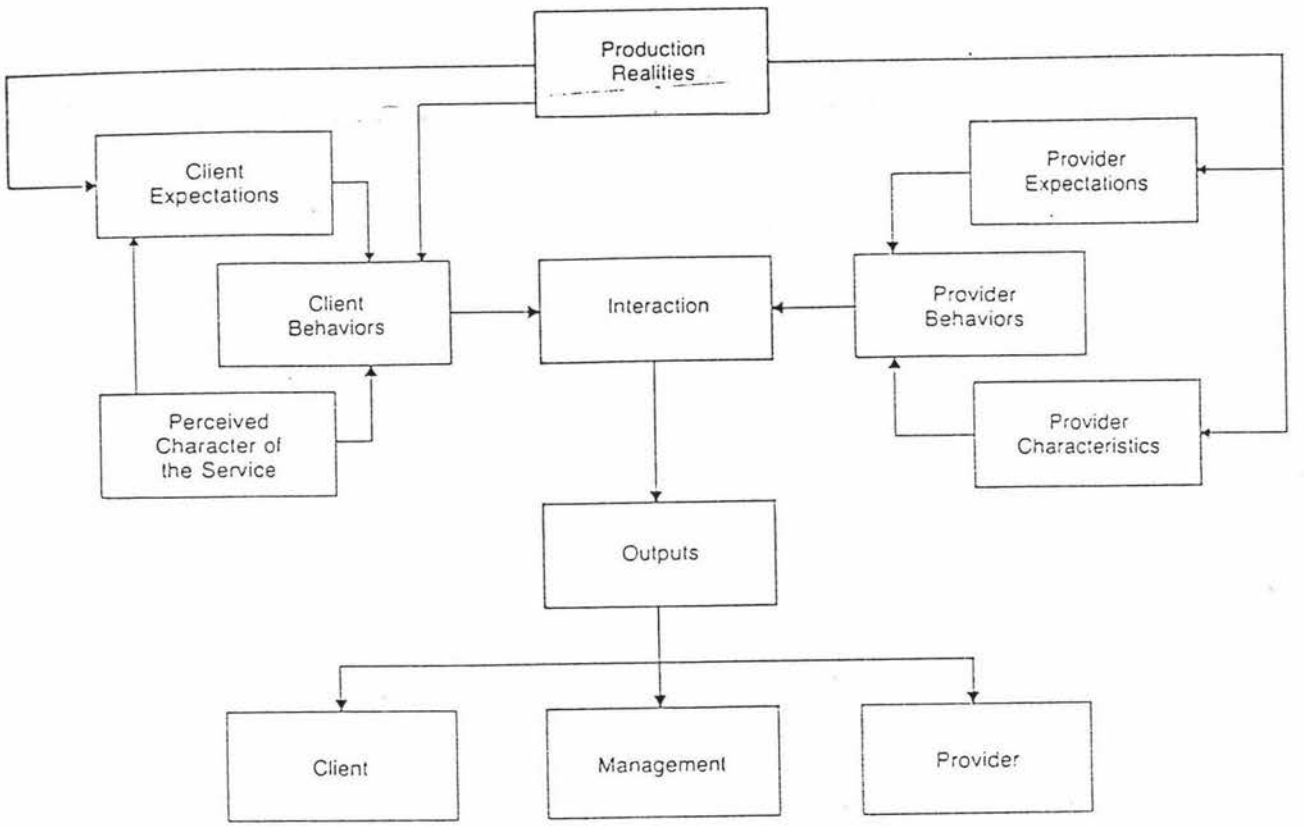
Other approaches have been made to explain the service encounter and to predict why the customer is satisfied with some specific service encounters more than others. Researchers have looked at how customers choose amongst different services through analysing the service encounter and through the study of different dimensions which differentiate amongst service encounters (Czepiel et al 1985).

Czepiel (1985) proposes that customers and providers have specific expectations regarding roles each should play in the service encounter. Each person makes specific contributions to the service exchange to create a final output or service. Viewing the service in relation to customers and providers assuming specific roles in the service exchange relationship is the basis for studies of role theory (Solomon et al 1984) and interdependence theory (Czepiel et al 1985.)

Although service encounters may share common characteristics and processes, it is recognised that customer expectations of the dimensions of the service vary within and between different service settings. These expectations are hypothesised to be a function of client perceptions, provider characteristics, and production realities (Czepiel et al 1985). Customer perceptions of the characteristic of the service, production realities, and provider characteristics are hypothesised as three dimensions on which customers evaluate and differentiate services. The model of the service encounter as illustrated by Czepiel (1985) can be seen in Figure 3.4. This model proposes a relationship exists between production realities, client and provider expectations and behaviours, and the resultant service output. Three primary groups are involved with evaluating the

service output including providers, management or the organisation, and the clients or customers of the service.

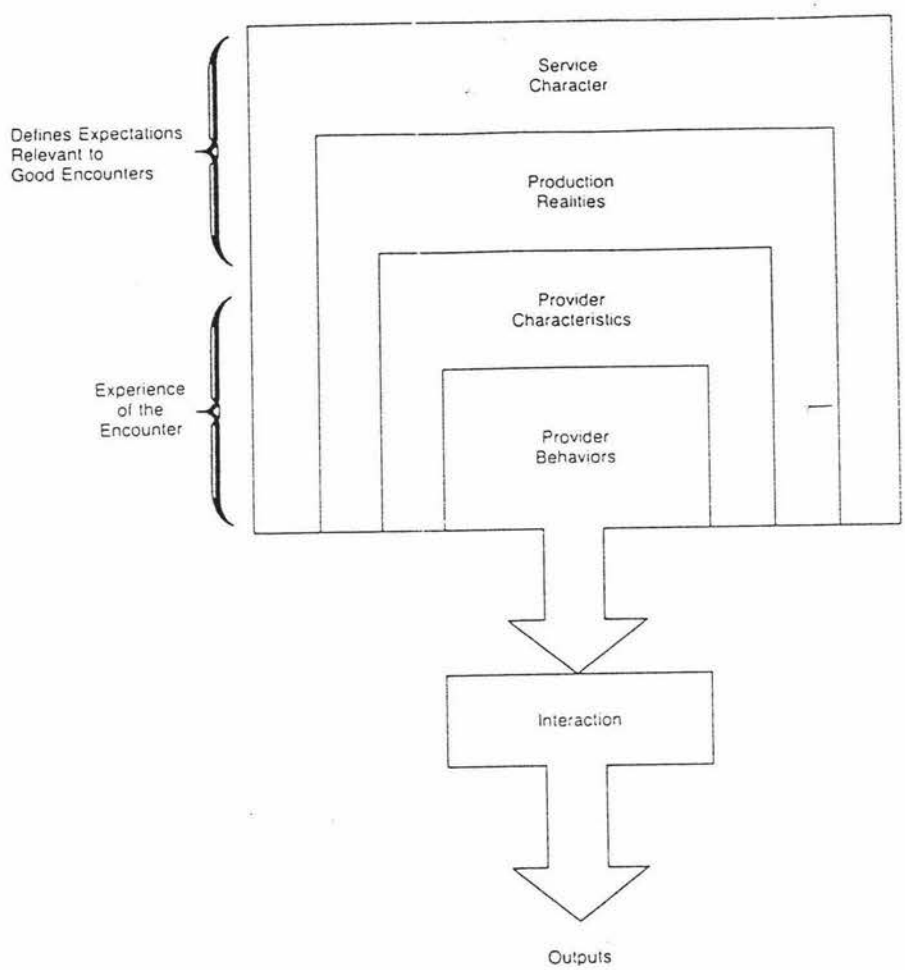
Figure 3.4 A Model of the Service Encounter



Source: Czepiel, 1985

The relationship between service dimensions and service outputs can be viewed in Figure 3.5. Czepiel hypothesises that clients have expectations of the service based on the following elements: service characteristics, production realities, provider characteristics and provider behaviours. Factors influencing the evaluation of the service output include client expectation of service dimensions and experience of the service encounter.

Figure 3.5 Good Encounters: A Consumer Perspective



Source: Czepiel, 1985

Differences between services can be explained through looking at the elements of each of the three dimensions of services. Figure 3.6 represents the elements of service characteristics and production realities which are judged by the customer. Characteristics of the service itself such as the purpose of the service, cost, and risk may be appraised by the customer. Elements of the production of the service such as complexity, location, or technology are additional aspects which may be evaluated by the customer.

Figure 3.6 Dimensions of the Service Encounter

Element	Continuum
CHARACTERISTIC OF THE SERVICE	
Purpose	Pleasure/Function
Motivation	Effective/Necessity
Result	Positive/Negative
Salience	Important/Unimportant
Cost	High/Low
Reversibility	Easy/Difficult
Risk	High/Low
PRODUCTION REALITIES	
Technology	Human/Mechanical
Location	Client/Provider
Content	Mental/Physical/Emotional
Complexity	Simple/Complex
Formalisation	High/Low
Consumption Unit	Single/Group
Frequency	High/Low
Duration	Long/Short

Source: Czepiel, 1985

Characteristics of the service provider are also hypothesised to influence the customer evaluation of the service. Figure 3.7 delineates aspects of the provider characteristics which may be evaluated by the customer.

FIGURE 3.7 Provider Characteristics

Provider expertise	The extent to which the individual provider can affect the outcome of the service through his or her skills
Provider attitude	Provider traits including aspects such as helpfulness, warmth, friendliness, caring, etc.
Demographic	Characteristics including ethnicity, class, age, education, sex, etc.

Source: Czepiel, 1985

Czepiel (1985) suggests that customers evaluate the service provider based on dimensions including expertise, attitude and characteristics of the individual, including factors such as age, sex, class, etc. Czepiel et al (1985) contributes to the understanding of how consumers evaluate diferent dimensions of the service encounter.

EVALUATING THE SERVICE ENCOUNTER

The three major groups who may be involved in evaluating the service encounter are providers, customers and management. The role and interests of each group in the service exchange process differ. When evaluating the quality of the service, it is important to consider the views of each of these groups. The following are aspects of the service exchange which may be of interest to individual groups.

Provider Evaluation

Service providers are generally concerned whether the service exchange is personally rewarding or costly. Providers would be interested in comparing their investment in the service delivery process and the resulting rewards that they may receive based on the service outcome. Providers typically have anticipations regarding the outcome of the service exchange. They are generally interested in

ensuring the service exchange results in positive outcome as perceived by the customer. Czepiel contributed the following to the understanding of provider evaluation of services:

> "service providers are genuinely concerned that their clients receive good service and are frustrated when organizational limitations, policy, or lack of concern frustrate their ability to provide such service (Czepiel 1985, p 13)."

Organisational Evaluation

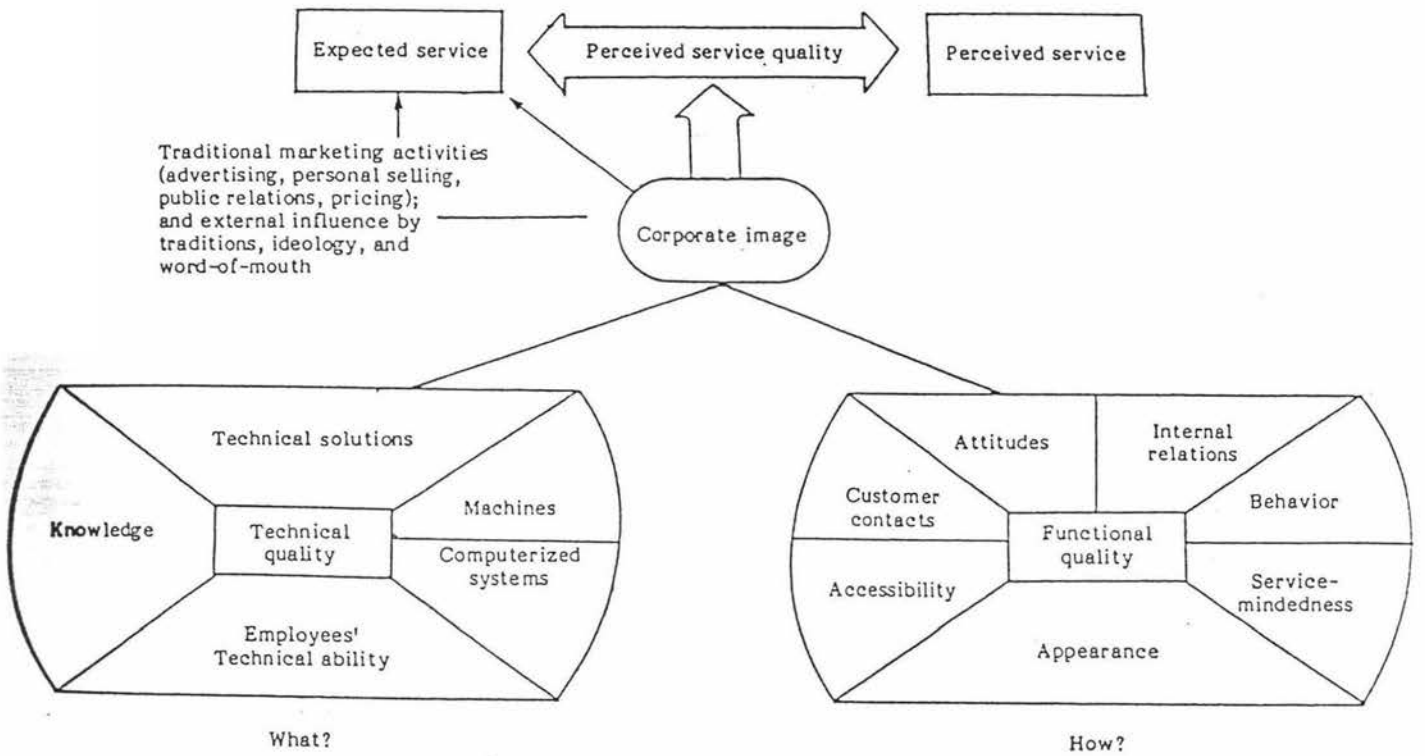
Managers of services may be interested in the service outcome as it relates to the organisation. Managers are interested in whether the service exchange results in repeat service encounters and positive customer communications about the service. In addition, managers may be interested in the impact that the service process has on employee motivation and retention.

Customer Evaluation

In service operations, one must picture what customers in the marketplace are looking for and what they are evaluating in the process of receiving the service (Gronross, 1982). Addressing the concern that no models exist on how customers perceive quality of services, Gronross defined various components of service quality and developed a conceptual model.

The quality dimensions are those critical elements of the service which influence customer's perception and evaluation of quality. Three primary dimensions have been identified for service quality including technical and functional quality and image. These service quality dimensions are interrelated and are illustrated in Figure 3.8.

Figure 3.8 Perceived Service Quality



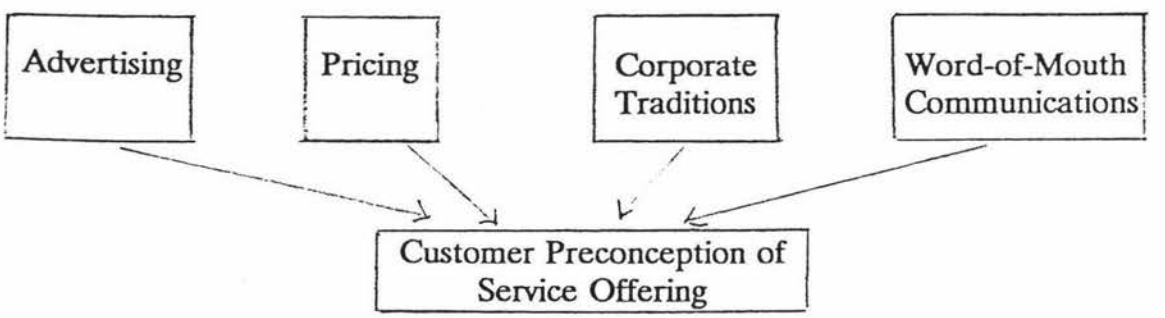
Source: Gronross, 1982

Technical quality is considered the outcome of the service or what the customer receives as a result of the service exchange. Functional (also described as expressive or process) quality refers to how the service is provided. Functional quality is judged during the service exchange and is considered more important when there is a need to differentiate a service from its competitors (Parasuraman et al 1985). An acceptable level of technical quality is a prerequisite for a satisfactory level of functional quality to occur.

Gronross (1982) states that the image involves the perception of the customer towards the service firm and stems from the technical and functional quality reputation of the firm. The corporate image is the result of how customers view the firm. Certain activities such as advertising can influence the image. Marketing activities may have an impact on customer's expectations however Gronross states that activities undertaken by the service firm to enhance the image do not always result in improvements in perceived quality.

For example, if activities such as advertising results in an increased expected service level and this level of service is not delivered, the customer may be dissatisfied with the service. Therefore promises in relation to customer service must be upheld to avoid the possible likelihood of dissatisfied customers. The preconception of the customer towards the service offering may be influenced by factors such as the individual's previous experience with the service, advertising, pricing, corporate traditions, and word-of-mouth communications as illustrated in Figure 3.9.

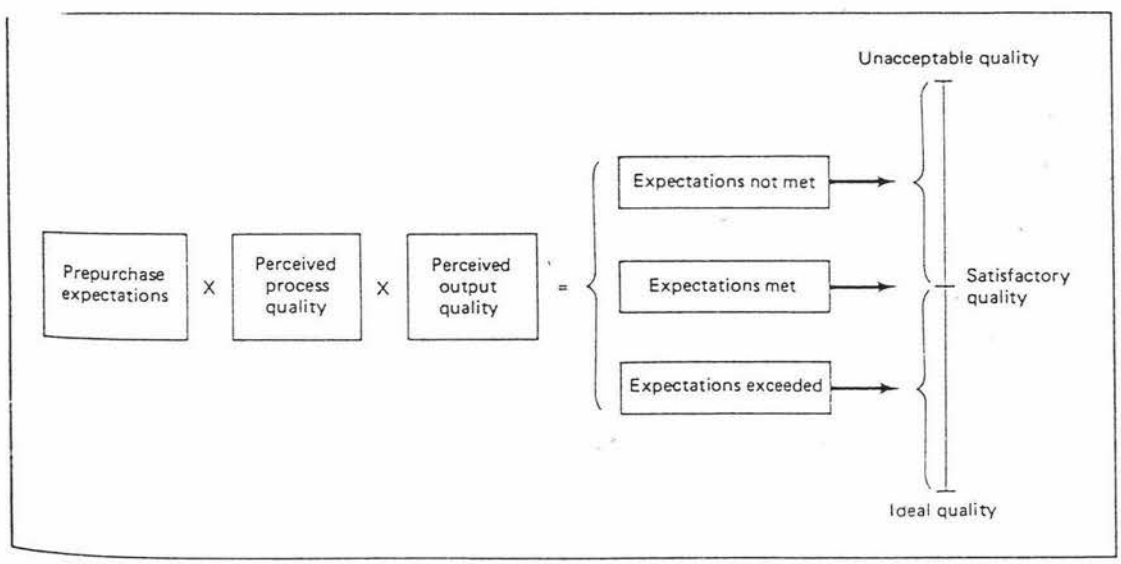
Figure 3.9 Factors Influencing Customer Preconception of the Service Offering



Source: Gronross, 1989

Parasuraman, Zeithaml and Berry (1988) build on this perspective to state that quality is conformance to customer specifications and add that quality is defined by the customer rather than the provider. Expectations are anticipations or wants from the customer and involve what the customer believes should be received from a service. Service quality is defined as the customers' perception of the differences between service expectations and service performance (Gronross 1980; Lewis and Booms 1983; Parasuraman et al 1985). An illustration of this concept can be seen in Figure 3.10.

Figure 3.10 Continuum of Perceived Service Quality



Source: Lovelock, 1988

PERCEIVED SERVICE QUALITY

A significant contribution has been made by Parasuraman et al (1985) in identifying the relationship between customer satisfaction and service quality. For example, in carrying out studies of customer satisfaction of services it was found that those respondents who stated that the service was satisfactory, did not report that the service was of high quality. Customers may be satisfied with the technical

outcome of the service but not the manner in which it was delivered. They suggest that evaluations of service quality are based on dimensions in addition to customer satisfaction with the service exchange. Satisfaction is related to specific service exchanges, however perceptions of service quality are based on overall experiences with the service firm.

Service quality is closely related to the customer's general attitude toward the service (Parasuraman et al 1988). The perceived quality of the service is defined as the outcome of the evaluation process in which customer expectations are compared with the perceived service performance (Parasuraman et al 1985; Gronroos 1982). Parasuraman et al (1988) state that perceived service quality involves the degree and direction of discrepancy between customers' perceptions and expectations.

Customers make decisions on service quality based on efforts of all those personnel who make up the service. In delivering a service to the customer, the provider must obtain an understanding of what the customer wants from the service, when they want it, and how they want it (Beckwith and Fitzgerald 1981). It is important to identify those specific service elements or criteria on which customers are making their evaluations. To achieve this understanding, it is necessary to carry out research on features unique to the individual service and to have avenues for open communication to occur between the service provider and the customer.

FEATURES OF SERVICE QUALITY

Based on a series of interviews in different service firms, Parasuraman, Zeithaml and Berry (1985) built on the work of Gronross (1982), and identified ten aspects of how a service is perceived by the customer. As depicted in Figure 3.11, these aspects are used in classifying the quality dimensions of the firm.

FIGURE 3.11

FEATURES OF SERVICE QUALITY

1.	Reliability-	relates to consistency of performance and dependability. The firm keeps its promise.
2.	Responsiveness-	the staff respond in a creative and timely fashion.
3.	Competence-	staff have the necessary skills and knowledge to perform the service
4.	Access-	the service has convenient hours and location and short waiting time,
5.	Courtesy-	the politeness, friendliness or consideration of contact staff.
6.	Communication-	staff have good listening skills; the service is described accurately, in a language understood by the customer.
7.	Credibility-	relates to trustworthiness and honesty of the staff; the staff are concerned with the interests of the customer.
8.	Security-	refers to physical safety, financial safety and confidentiality that the firm ensures.
9.	Understanding-	relates to willingness of staff to provide individualised service and staff understand unique needs of the customer.
10.	Tangibles-	include the physical evidence of the service including facilities and the appearance of staff or other customers in the service facilities.

Source: Gronross, 1982

These features represent dimensions of the service which need consideration when assessing and monitoring aspects of service quality.

In summary, service quality evaluation includes a number of interrelated factors. The service exchange may be evaluated on a satisfaction/dissatisfaction continuum. The factors involve the expectations perceived by customers prior to the service transaction as well as the process and output quality which is perceived to be received by the customer. Three dimensions of service quality have been described which include technical quality, functional quality and the corporate image. A number of aspects of the firm influence the customer's perception of service quality. The level of satisfaction experienced over time results in perceptions of service quality and the concepts of satisfaction and service quality are interdependent.

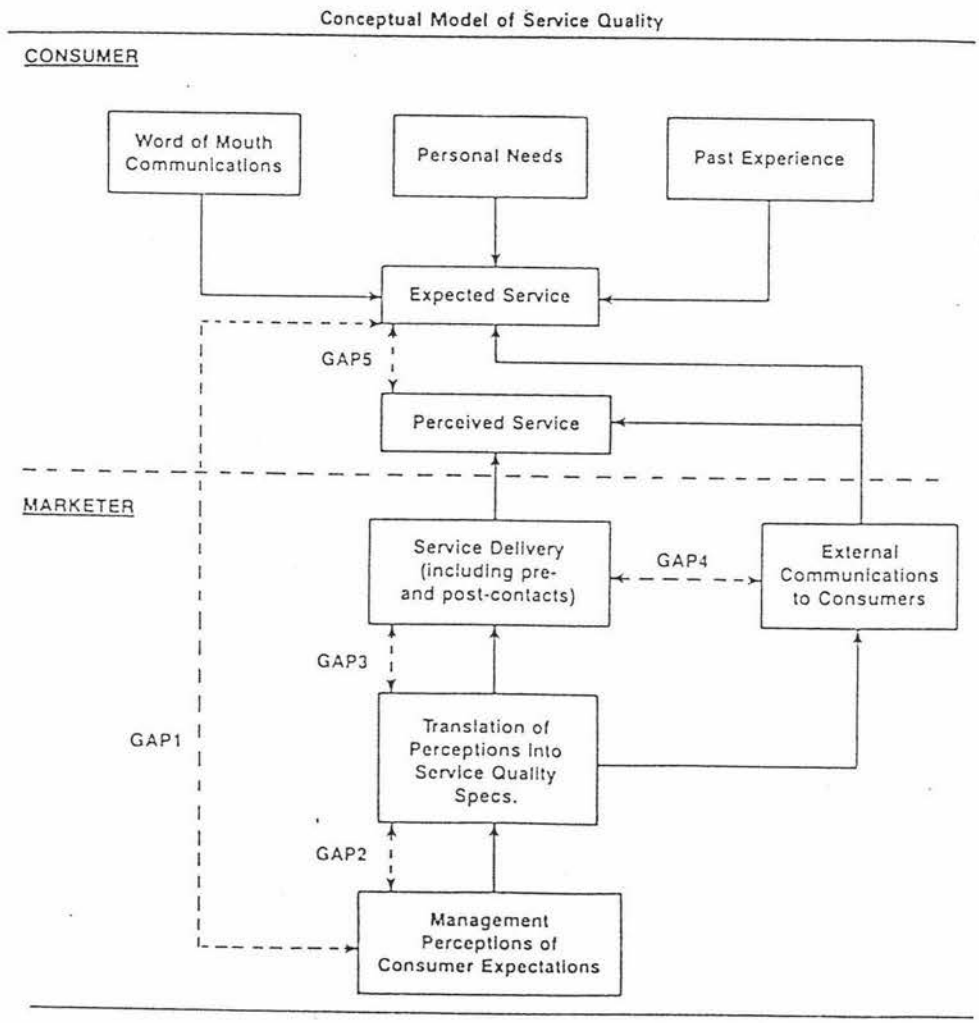
Researchers have continued in their efforts to further understand those factors that influence customer's perception of service quality. A conceptual model has been developed for use in operational settings to better ensure that service delivery results in customer satisfaction.

THE GAP ANALYSIS OF SERVICE QUALITY

Parasuraman, Berry and Zeithaml (1988) carried out exploratory studies which indicate that customer's quality perceptions are influenced by a series of distinct gaps occurring in organizations. They state that perceived service quality is dependent on the size of identified gaps between management and the customer. Gaps include customer expectation-experience discrepancies in addition to differences in service design, communications, management and delivery. These gaps on the service provider side can impede delivery of services that customers perceive to be of high quality.

The conceptual model of service quality gaps was developed from exploratory research carried out with customers as well as personnel and managers at different levels in a variety of service industries. In their studies, Parasuraman et al (1988) used a variety of methods including questionnaires, focus group interviews and mixtures of qualitative and quantitative research. After analysing and coding their data, factors were identified which contribute to the occurrence of specific gaps between perceptions of service quality held by management and those held by customers. The gap analysis is illustrated in Figure 3.12.

Figure 3.12 The Gap of Perceived Service Quality



Source: Parasuraman et al, 1985

These service quality gaps which influence the service quality are described as follows:

1. **Gap between customer expectation and management perception.**

   Managers do not always understand how customers evaluate the service offering. Managers may misunderstand what features of the service are important and what level of service performance is necessary to satisfy customers.

2. **Gap between management perception and service quality specifications.**

   Managers may have difficulty in meeting the customers expectations. The level of quality expected by the customer, as enforced through the setting of specific service standards, may not be achieved due to lack of effective specifications by management. This may be a result of the lack of standards, unclear or unrealistic standards, or lack of commitment to maintaining specific quality levels.

3. **Gap between service quality specifications and service delivery.**

   Specifications for service quality may be in place, however there may be an inability or unwillingness of service staff to perform at the required level.

4. **Gap between service delivery and external communications.**

   Communications from the service provider may influence the customer expectations of the service. Promises which may be made, but not delivered, are likely to result in poor customer evaluations of service quality.

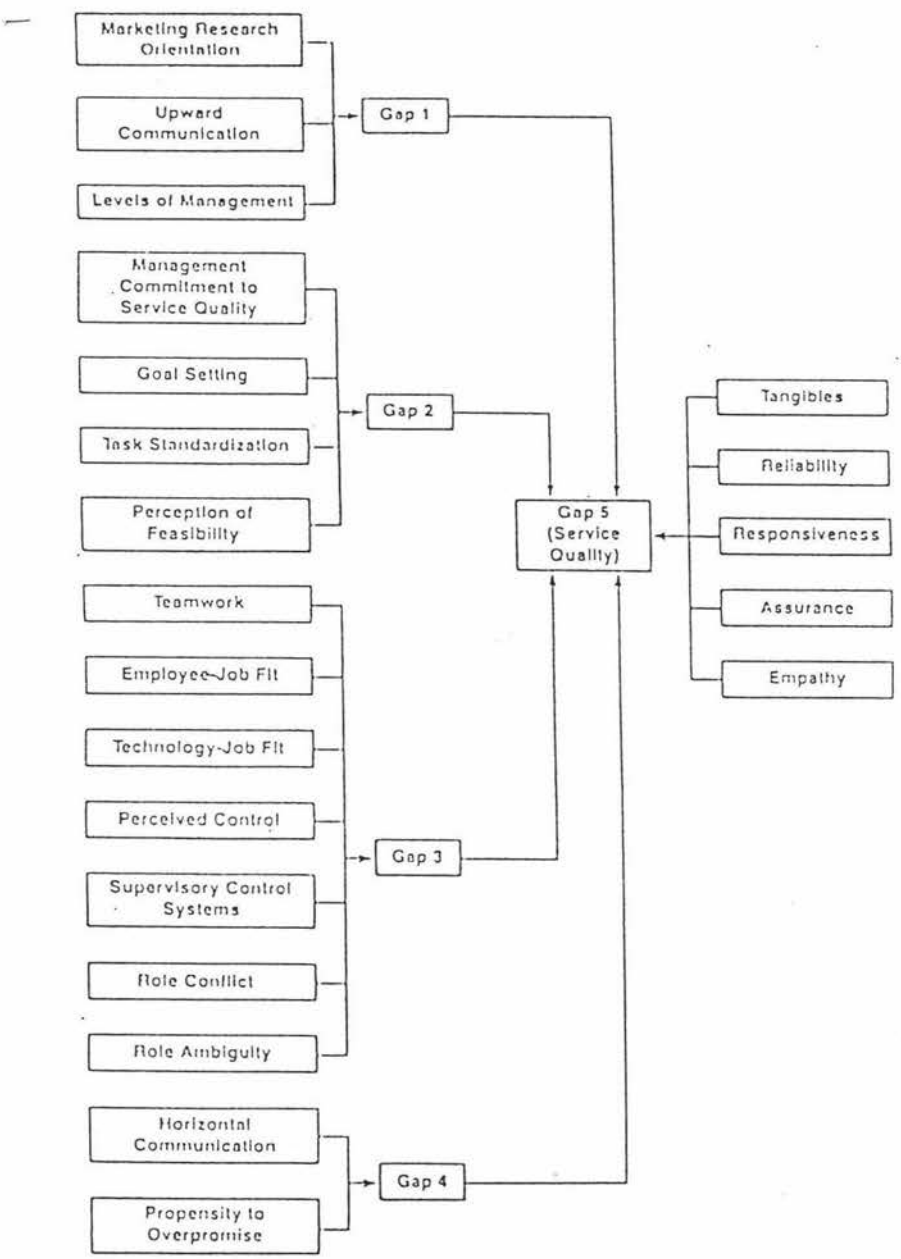
5. **Gap between perceived service and expected service.**

   Inability to deliver services in the manner which is expected by the customer, results in the gap between perceived and expected service.

Berry et al (1988) state that features and attributes of a service which suggest high quality to customers are not always understood by managers. An outcome of this lack of understanding is that inappropriate performance criteria may be used when trying to ensure features of the service are effectively managed.

This conceptual framework identifies the need for managers of service firms to first understand customer expectations and then to influence the service to ensure customers are satisfied with the service. Further research indicates that perceived service quality is positively or negatively influenced by factors occurring in organisations. The extended model of service quality, pictured in Figure 3.13, illustrates factors which influence the ability of service firms to ensure service quality.

Figure 3.13 Extended Model of Service Quality



Exploratory studies on service quality indicate that although service quality is important, managers need to do more to identify customer perceptions of service quality, examine gaps between these perceptions and current management practices and close these service quality gaps (Parasuraman et al, 1985).

3.3 SUMMARY

This section looks to the literature to identify how managers may define and measure service quality. A number of approaches have been taken to address the issue of service quality. Approaches from the manufacturing industry, including the use of standards based on objective, measurable attributes of the product and production process, failed in services largely due to the interactive nature of the service delivery process. Researchers have also looked toward alternative methods which recognise the importance of focusing on the subjective perceptions of service customers when defining and ensuring quality. Other approaches including measures of customer satisfaction, the gap analysis and industrial marketing studies, offer much insight into the understanding of customer satisfaction and service quality. It has been shown that there is no one right way to evaluate service quality. Exploratory studies employed in recent times may assist managers to understand what factors contribute to positive customer perceptions of the service.

Further work is needed to assess levels of service quality in specific industries for the purpose of uncovering dimensions of the service where customers may be experiencing dissatisfaction. This information can then be used by management to better align the service to meet customer expectations. Concepts of service quality have been identified. It is important now to look at current approaches used in the health care industry to measure quality in order to ascertain if greater levels of attention to service quality may be necessary.

CHAPTER 4

COMMON MEASURES OF QUALITY IN HEALTH CARE

THE LITERATURE

4.1 INTRODUCTION

In the earlier discussion, the rationale for the service quality approach in the public health service has been established. Investigating concepts of service quality has illustrated a variety of approaches used to assess performance of the service in relation to service quality. It is difficult to look at perceptions of service quality without distinguishing this focus of evaluation from common approaches to evaluating quality in the specific industry. When addressing perceptions of service quality, it is important to determine linkages or disparities between the evaluation of service quality and traditional quality assurance activities. The present topic for discussion focuses on assessing how common practices in the health care industry address quality.

A number of methods have been used to address quality issues in health care. Trends in health care quality assurance paint, collectively, a rather confusing picture. This is due, in part to the absence of a framework which can accommodate the various paradigms and orientations employed in performing research on health service quality. This confusion is a result of a number of factors.

Providing consistently high quality health services is difficult due to the variation in defining quality, the complexity and nature of the industry, and the need to understand the dimensions of the relationship between the organization providing the service and the customer. In addition, defining the customer of the health service is difficult because of the confusing relationship between the provider and customer in the health sector. This relationship frequently involves the government, third party payers, regulatory agencies, professional groups, medical practitioners and actual consumers or beneficiaries of the health service.

Despite the centrality of quality assurance in health care, there exists three major deficiencies in the current status of quality assurance theory. First, quality assurance activities have largely focused on technical aspects of health services (e.g. measurement of health status, beds per patient, etc.). In addition, a micro-orientation has been taken when attempting to understand interrelationships between complex factors and dynamic influences. Little attention has been given to questions of maintenance, adaptation, and evolutions of quality assurance as competitive entities.

Much of the activity in evaluating the quality of health care has taken place under the umbrella of quality assurance. In health services, ensuring and monitoring quality has primarily been the responsibility of single professional groups, such as physician groups, nursing or allied health groups. Methods previously used in addressing quality in the health sector have largely focused on clinical outcomes, professional standards and medical performance. Due to the autonomy of practice of the professional groups and the division of tasks, communications and sharing of information between individual groups have been extremely limited.

There are different approaches to addressing quality issues in the health sector. Quality in the health services literature has traditionally been discussed in terms of quality assurance and defined by providers in relation to quality of health care. In light of changes in demands of the health sector, the literature cites important limitations of traditional quality assurance practices.

4.2 QUALITY ASSURANCE IN HEALTH CARE

Pollitt (1987) views quality assurance in health care as those activities and programmes which are carried out to assure the quality of care in a defined medical setting. Figure 4.1 presents common terms related to health care quality assurance.

FIGURE 4.1

Common Terms Related to Health Care Quality Assurance

ACCREDITATION:	External review carried out by independent agency which acknowledges that the institution, facility or service meets predetermined criteria.
PEER REVIEW	The process whereby clinical performance of an individual or group is evaluated by members of the same profession who share the same status.
CLINICAL REVIEW	Review of the quality and appropriateness of activities and services offered by health professionals in a defined setting.
UTILISATION REVIEW	Management practices aimed at monitoring and controlling health service resource expenditure. The focus may include evaluations of staffing ratios, admission rates, bed stays, etc.
TOTAL QUALITY MANAGEMENT/ CONTINUOUS IMPROVEMENT	Total quality is an approach to management that aspires to continually improve the performance of all the processes, services and products of an organisation. In seeking improvement, it emphasises the participation of all employees, the role of the customer, the importance of measurement, and the understanding of variation.
QUALITY ASSURANCE	Implies the assessment of the actual level of quality of services rendered plus the efforts to modify, when necessary the provision of these services.

Figure 4.1 (continued)

HEALTH STATUS REVIEW	Measurement of patient post-treatment condition based on pre-treatment diagnosis.
AUDITS -	Procedure carried out to review or verify the various components of the health service or facility based on specific criteria. Audits may address different topics. The review may be carried out by individuals or groups internal or external to the health service being examined. Audits usually involve the production of a written report.
Prospective	Audit carried out before a service receives funding or is allowed to open.
Concurrent	A review undertaken while services are being offered or patients are receiving care.
Retrospective	Evaluations of services, procedures or facilities after the service has been delivered.
EVALUATION OF STANDARDS	A review of predetermined criteria against which performance is measured.
Structure	A review of what is required to produce the services. Involves inputs to the service or facility such as qualifications of staff, systems for operating services, etc.
Process	Review of aspects or elements of the service relating to how the service is delivered.
Outcome	Evaluation of the aspects relating to or defining the result of the service or service processes. Evaluating what is generated as a result of the service.

The purpose of integrating quality assurance programmes in many cases has been to address identified deficiencies in quality. The focus on deficiencies in health care practices can be considered evaluative and corrective as opposed to preventative in their nature.

Health care researchers and theorists have used different approaches to defining quality. A brief overview of these fundamental concepts may contribute to the understanding of some of the limitations in current quality assurance practices. Although methods vary, several authors describe quality in relation to three interrelated components including input or structure, process and output or outcome quality (Donabedian 1980; Lehtinen 1983). Components of quality are evaluated based on the belief that they in some way, impact on the quality of the service. The quality components are pictured in Figure 4.2.

Donobedian, (1980) in describing quality in medical care, identifies three components of any activity which aims to produce consistent results.

Figure 4.2 Components of Quality

STRUCTURE ————>PROCESS————>OUTCOME

Source: Donabedian, 1980

The process component involves the activities illustrated in Figure 4.3.

Figure 4.3 Process Component of an Activity

INPUT————>ACTION————>OUTPUT

Source: Donabedian, 1980

Donobedian describes quality as an evaluation or judgement which is based on individual perceptions, values and expectations (1980). In utilising this framework, assessment of quality must be carried out in relation to similar items or events.

These structural constructs or quality inputs are described as aspects of the service system such as the professional qualification and clinical competency, facilities, management structure and available resources, which are necessary for the system to operate and for health professionals to diagnose and treat the patient (Donabedian 1980). There may be either internal or external controls over input quality. Examples of internal controls may include credentialling committees in hospitals and examples of external controls may include competency evaluations as carried out by professional bodies.

Accreditation is an evaluation tool used to address quality issues in healthcare which involves the formal recognition by an independent body that predetermined standards have been met. Accreditation involves the use of standards and required compliance with identified criteria and specifications. Accreditation manuals with health care standards are used for developing required systems.

For a facility or service to become accredited, an external group of designated surveyors are usually brought in to audit or review different aspects of the service and standards, including policies, procedures, equipment and facilities. Standards have been expanded to include administrative components such as job descriptions, the specialisation of tasks, or renumeration policies. Accreditation

standards vary, however in general, hospitals are required to have written quality assurance programmes and procedures in place and to ensure these are integrated and coordinated.

Accreditation procedures focus on the inputs to the health service. The focus in carrying out the accreditation review is on compliance to standards. Problems have been identified with the evaluation of conformance to the accreditation criteria due to variation within individual systems.

The accreditation process has offered little in controlling variation in healthcare performance between hospitals and facilities. This is largely due to the fact that the accreditation audit focuses on the inputs and structure of the health service rather than the processes and outcomes of health services. Little work has been carried out which evaluates the effectiveness of the criteria on which the standards have been set in relation to the performance or outcomes of the health service. In addition, there is little evidence to show that accreditation accurately represents the quality dimensions in the organisational processes in which health services are provided.

Accreditation may be mandatory to obtain funding to operate health services and provide training. For example, in the United States, accreditation status is required in order to receive third party or federal government funding. The accreditation status may also be sought voluntarily (as in Australia, Canada and recently in New Zealand). Hospitals who seek voluntary accreditation are frequently doing so as a requirement of third party funders such as insurance agencies. Little evidence has demonstrated the relationship between accreditation and performance of the health service. Because of this significant limitation, further research is being undertaken by accreditation bodies to define outcome measures and compare the performance of individual health services against specific criteria (Patterson 1989, Koska 1990).

Health service providers have also focused on process evaluations when addressing service quality. Service processes are the means by which services are provided. Reviews of documentation or observations of health service delivery are examples of evaluations of process quality. Process audits are sometimes used to carry out health service evaluations. Areas which may be covered by the process audit may include a review of process tasks, areas of responsibility, or those activities which are carried out in completing the task. Other examples of process evaluations include peer review, field observations, documentation audits, professional standard setting, and evaluation of conformance to the standards.

Donobedian (1980) suggests that reviews of health care processes be carried out which focus on the level of effective therapeutic intervention impacting on the health status of the patient. Evaluations of the level of therapeutic intervention may focus on the process of providing health services and the impact of these processes on health care outcomes. Activities to evaluate quality in this area may include a review of the diagnostic services for defining the client's health problem, assessment of alternative treatments, or activities carried out in resolving the clients' problems.

Output or outcome quality is another important aspect of quality evaluations. Outcomes of quality are identified as those aspects which are evaluated after the service is delivered. Donabedian (1980) describes the elements of outcome quality to include expressive and instrumental (technical) elements. Expressive elements may include assessments of customer satisfaction or dissatisfaction or customer complaining behaviour (Ware, Davies-Avery and Stewart 1978).

Technical outcomes of health care have been defined through the measurement of health status. Evaluating the technical aspects of health status involves a measure of the customers' post-treatment condition relative to the pretreatment diagnosis. For example, measures of morbidity and mortality are considered indicators of quality of surgical care. Outcomes are based on whether the inputs and the processes, such as specific diagnostic procedures and therapeutic

interventions have the expected therapeutic effect (Perry 1988). Increasingly, providers and purchasers of health care are looking for outcome measures as indicators of minimum acceptable measures for quality (Koska 1990; Lanning 1990).

4.3 LIMITATIONS OF QUALITY ASSURANCE ACTIVITIES

A number of limitations have been identified in some of the methods currently used to evaluate or ensure health service quality. Although used in many quality assurance programmes, retrospective reviews of processes or outcomes have demonstrated few benefits. For example quality outcome indicators are a diagnosis-specific evaluation carried out on a retrospective basis (Payne 1976). Payne discovered that outcome measures of medical care are problematic to accomplish on a retrospective basis due to the difficulty in assessing the patient risk factors, the incompleteness of the physician's office or hospital records, and the limitations of the criteria used.

The review of documents is not fully effective due to the difficulty in obtaining relevant and accurate data which is specific and complete enough to be found useful. In addition it is more than likely that only a few errors are identified. When focusing on past events, the opportunity to prevent errors from occurring are missed due to the inability to completely identify errors.

Data from monitoring past events contributes little to identifying priorities for problem solving, allocating resources, or improving the way standards are written. In addition, in studies of peer review, documentation is not necessarily an accurate reflection of the actual performance that occurred (Pollitt 1987). It is also difficult to make comparisons across individualised service delivery systems.

Quality reviews are largely provider focused. As such, previous activities which are common in quality assurance programmes underemphasize the roles of users, nonprofessionals and organizational processes on the whole. In particular, in

reviews of quality in health care, there has been a significant lack of focus on the customer. For example, Lanning (1990) states that in the past, health care quality models view health status as the end result. In this view of defining quality, there is little role for lay customers to play since they are not qualified to evaluate quality in relation to scientific and technical aspects of their clinical/medical needs (Donabedian 1980).

Quality evaluations have been focused within subsystems of the service such as individual departments. There is very little interdepartmental or external assessment of quality assurance practices. In addition, when addressing subcomponents of the processes such as reviews of records, a micro perspective is taken of the criteria that is used to constitute concepts of quality. In doing so there may be inadequate understanding of how to define quality and what activities are necessary to ensure quality. For example, the overemphasis on this approach may allow one to neglect the evaluation of whether the standards are adequate in the first instance. Recommendations for future studies include the focus on the expected correlation between process of medical care and outcome of care (Lanning 1990).

The literature on health service quality suggests that incentives for becoming active in these traditional quality assurance activities are varied. For example, incentives sometimes stem from institutional or regulatory requirements, threat of malpractice, or interest in individual areas of professional development. Traditional health care definitions of quality were centred on meeting the specifications set by the profession, provider or regulatory and accrediting bodies. Recognition must be given to the narrow focus and possible limitations of traditional quality assurance practices. Further work is needed to investigate the various incentives that exist for professionals to involve the customer and maintain the customer focus when assessing health service quality.

A review of some of the literature on traditional approaches to evaluating quality has demonstrated several important limitations. One of the key limitations is the

lack of customer focus in quality assurance activities. The United States has seen an increase in quality assurance programmes, largely through the threat of malpractice, the influence of requirements of third party payers, the regulatory role of professional associations (e.g. credentialling of professionals), or that of government (accreditation of facilities). Due to the requirement to comply with external regulations of funding bodies, the administrative aspects of quality assurance began to involve not only providers but administrators, researchers, economists and others.

Frequently there have been large financial investments in the development of formalised quality assurance programmes. Cost constraints in health care have resulted in increased involvement of health service managers in making decisions in relation to funding quality assurance activities. The impact of resource constraints means that the funding of quality assurance initiatives is increasingly being scrutinised by health service administrators.

With the increased interest of managers in resource allocation for quality assurance, attention has been given to the cost-benefit analysis of such activities. To date, little evidence has demonstrated that quality assurance programmes have been cost-effective. For example, Hetherington (1982) discovered that quality assurance programmes are difficult to rationalize in times of resource constraints.

4.4 SUMMARY

Quality in the health services is fragmented into seemingly disparate disciplinary orientations: a health outcome approach and an organisational process approach. The former attempts to apply theory on health status measures to the evaluation of health care quality. The latter borrows heavily from the manufacturing and production literature and is largely structure and process oriented, emphasising standard development and measurement. Rarely have there been attempts to integrate these perspectives. Indeed they should be viewed as complementary,

because the former deals mainly with technical "outputs" while the latter is concerned with structural systems and behavioral "processes," all of which are components of the health service.

Empirical studies of health service quality have been extremely limited in their scope and methodological sophistication. The vast majority of empirical work in the literature on the delivery of quality health services has been purely descriptive in nature, with little or no testing of formal hypotheses derived from theory. Although more recent studies evidence a trend towards more systematic testing of theoretical relationships, these investigations have typically been confined to an analysis of a single approach towards delivering quality health services. Future service quality research in the health industry must focus on carrying out systematic analysis of factors which influence the ability to deliver quality health services within the confines of the organisation.

The usefulness of traditional approaches in helping providers respond to strategic environmental demands is in question. Issues facing managers of today's health service environment require new ways to evaluate quality which maintain the customer focus and provide information which may be utilized in service development. Health service managers and providers are looking toward organisational approaches to improving the processes of delivering health services. Evaluating service quality based on methods previously undertaken in exploratory studies (Parasuraman et al 1985) is seen as a potentially useful method of addressing strategic issues facing health service managers.

CHAPTER 5
PROBLEMS IN ADDRESSING SERVICE QUALITY

5.1 INTRODUCTION

This study focused on the need for health service managers to understand concepts of service quality. In so doing, concepts of service quality have been described and differences have been delineated between approaches to evaluating service quality and more traditional approaches to evaluating quality in the health care industry. The study suggests that new approaches to addressing quality are needed to enhance the ability of the health service organisation to effectively respond to strategic issues. It is suggested that the service quality approach may enable managers to support service providers in more effectively responding to customer expectations.

The dimensions of the service that may be judged as important by the service customer are also examined. In order to undertake practical research in an operational setting, it is important to first identify those dimensions judged as important to the customer. Numerous factors that are unique to the individual industry being studied can affect the ability of the service to maintain a service quality focus. The pursuit of enhancement of service quality requires the identification of these factors. In addition, characteristics and trends within the industry that may affect the ability of service providers to enhance service quality are also identified.

In addressing service quality in an operational setting, the ultrasound diagnostic service provided within a public hospital is used as the study's focus. Ultrasound diagnostic services are managed as a component of the hospital radiology department and because of this, the background discussion is drawn from the body of literature on the management of hospital radiology departments. It is

suggested that challenges imposed by trends in the health service industry require that those responsible for managing ultrasound services monitor customer's current and potential demands for services.

5.2 PRESSURES FACING HEALTH SERVICE MANAGEMENT

In many areas of New Zealand, the public health sector is undergoing a review of resource expenditure to rationalise services and facilities. Several studies have been carried out, commissioned by the government, to review the funding and outcome of health service expenditure. These studies have addressed issues of equity, effectiveness and efficiency (Scott, et al 1986; Gibbs, A. et al 1988; Royal Commission on Social Policy 1988). The studies highlight the need for both managers and providers to more fully demonstrate that services are administered in an effective and cost efficient manner.

The need to measure value for money expended on health care is coupled with continued pressures to expand health service offerings. Evidence demonstrates the complexity of the problem. Joskow (1981) looks at trends impacting hospital services in general. Overall it was found that the hospital sector is diverse in terms of size, costs, kinds of services offered and types of patient treatment. The increase in costs of hospital care resulted from an increase in input prices, growth in population, and change in its composition (e.g. service offerings).

Another common trend includes increased competition for the health service dollar and requirements to justify activities in relation to overall service objectives. For example, literature from the United States suggests that there is a new competitive environment in which health services are now being delivered. The current situation finds hospitals in the United States which are overbedded, underfinanced, specialized, overstaffed, commercialized, and costly to maintain. Hospital traditions which focus on community service and sensitivity to the needs and wants of the medical staff are failing (Johnson 1990).

Major problems in the public health sector include scarcity of funding, higher levels of public demand for health services over available supply, and escalating health care costs. There is pressure on hospital managers to contain escalating health care costs while providing high levels of up-to-date, technologically sophisticated health services.

Greater attention needs to be given to focusing on areas in which there is high consumption of health service resources and on identifying who is responsible for making decisions in relation to health service expenditure. In addressing issues related to cost containment, it has been found by Scott et al (1986) that in New Zealand, approximately 70% of health care expenditure is on hospitals. When looking at issues relating to cost containment in the public health system, a focus on the actions of medical practitioners is necessary.

Patients typically require referrals from medical practitioners to utilise public health services. As such medical practitioners are a primary customer group of the services provided by the public hospital. Therefore medical practitioners have a key role to play in evaluating the effectiveness of the services in terms of benefits and outcomes of the services that are offered. Research is increasingly demonstrating the key role that referring physicians play in curtailing costs and improving the effectiveness of hospital services (Relan 1980).

In the majority of patient-related services, medical practitioners are the actual customer of the hospital's services. This is due to the fact that there is almost total dependency of patients on the decisions of medical practitioners for admission and consumption of hospital services.

This is supported by A. Relan, M.D., editor of the New England Journal of Medicine. Relan estimates that between 70 and 80 percent of all healthcare expenditures can be attributed to the decision of medical practitioners. He

writes, "Unlike customers shopping for most ordinary commodities, patients do not often decide what medical services they need - doctors do that for them (Relan 1980)."

Goldberg and Martin (1990) discovered that physicians hold the key to success in relation to hospital admissions and cost containment. They found during a study of physician preference on issues relating to hospital decision-making and control, partnership between medical practitioners and hospital staff is necessary to achieve mutual goals. The results of their study showed that physicians want greater involvement in hospital decision making and prefer services which facilitate their practice of medicine. They state that it is important for health service managers to direct efforts to improve services toward their referring medical practitioners. Goldberg and Martin recommend greater effort on the part of hospital administrators to assess and understand the needs of medical practitioners.

Medical practitioners want services that make patient care easier suggests Tucker (1977), a marketing educator. The marketing function for the hospital involves establishing and maintaining a mutually beneficial exchange relationship. From the marketing viewpoint if one focuses on the exchange relationship, it can be found that;

> "both the patient and the medical staff member have particular objectives to fulfil in exchange for their use of the hospital, and it is the task of management to meet these if the hospital is to be the institution of choice (Tucker 1977, p 44)."

Based on this literature, hospital managers must be attuned to medical practitioner demands for services. Focusing on the diagnostic services of the hospital, referring medical practitioners can be viewed as industrial customers who use purchased goods and services in their own production of goods and services. The medical practitioners purchase the service and then add value to the service

in the form of follow-up appointments and consultation. It is therefore necessary to ascertain trends which may influence the provision of hospital diagnostic services. The literature will be used to identify features of the service which may impact on how referring medical practitioners evaluate the quality of ultrasound services.

5.3 BACKGROUND TO HOSPITAL ULTRASOUND SERVICE

In hospitals, the common area for the management of ultrasound diagnostic services is the radiology department. The purpose of a radiology department is to provide a diverse range of diagnostic procedures and studies. This involves focusing ultrasonic waves through specifically identified areas of the body and recording findings in methods that can be interpreted. These studies may include ultrasound, radiography, computerized scanning, fluoroscopy, and other image-forming techniques.

The radiology department has responsibility for carrying out and interpreting diagnostic procedures, advising and consulting in interpreting the results, and maintaining a recording system for the tests and their professional interpretations. As ultrasound or imaging is designed as a diagnostic support service, the primary customers of the radiology department include hospital and community-based referring medical practitioners.

Providing ultrasound services in the public hospital involves a number of processes. The ultrasonographer and radiologist work with a team of staff in the radiology service to process, examine and diagnose patients and provide expert information to referring medical practitioners. As the diagnostic service is being performed, the staff who carry out the investigation, continually alters and shapes the service based on the assimilation of new information, judging probabilities, making conclusions and then taking action. Each case must be handled on an individual basis.

In this specialist area, radiologists act as consultants to medical practitioners in recommending and carrying out appropriate procedures. In this role, it is important to predict the potential requirements of referring medical practitioners to ensure the availability of necessary diagnostic services. After requirements of referring medical practitioners have been determined, one must then establish whether they are sufficiently informed to make appropriate and effective referrals.

Requirements for each individual referral may be diverse. Some medical practitioners, for example, use the ultrasound report to assist them in defining the health problem. Others may have a general idea of what is wrong with a patient and wish to fine tune the diagnosis. Others may be confident of the diagnosis and seek confirmation. In each situation a different service delivery system may be necessary.

The literature suggests that radiologists hold several key roles in delivering ultrasound services. A study was carried out over an eight month period in which activities of the radiologist include acting as both advisor, reviewing the benefits of specific tests based on individual patient needs, and as an educator, explaining the clinical relevancy, limitations, risks and costs of each examination. Radiologists spent fifteen percent of their time reviewing completed examinations, attending daily case conferences, discussing requests for examinations with radiologic colleagues, and reporting results to the surgical team (Baker and Stein, 1986). Identifying the customer of each process and ensuring service quality is adequately addressed is a difficult task when one considers the diversity and range of responsibilities of the radiologist.

Typically the management of ultrasound services within the hospital is the responsibility of the department head of radiology and the health service administrator. In the literature on the management of ultrasound services, it was found that features influencing the quality of the ultrasound services, are shared with the radiology department in general. Factors impacting on the radiology department influence the way ultrasound services are provided. The following

discussion will review features which have implications on the ability to manage service quality in ultrasound.

5.4 ISSUES INFLUENCING THE MANAGEMENT OF SERVICE QUALITY

In a public health service environment where demands for services commonly exceed available supply, it is frequently difficult to rationalise decisions to expand service offerings. Decisions to expand service offerings must be reviewed in light of the need to continually meet the expectations of customers in relation to existing services. When considering expanding services it is important to recognise the capacity of the organisation to deliver the level of service that is promised.

Studies have demonstrated that pressure to expand ultrasound service offerings have been long standing. In the 1970's it was found that increased sophistication in diagnostic equipment and technology resulted in the expansion of services offered from the radiology department. For example, Joskow (1981) completed a comparison of the numbers of hospitals offering radiology services while looking at the quantity and direction of technological change. In this study an increase in expenditure was estimated for radiology outpatient departments between the period of 1972 to 1976. In this time period, the services grew between 18.5 and 35.4 percent. The authors suggest that rate of technical development in the industry is linked with the rate of expansion.

Managers in highly specialised services face unique sets of problems which may affect the level of attention that is given to service quality. Along with continued pressure to expand service offerings, other issues impacting service quality have been identified. For example, Bragg (1987) highlights the problems facing chairpersons of radiology departments. These include a heavy administrative burden, inadequate time for research and the increasing need for managerial skills. In addition, problems include challenges to radiologist's role in controlling imaging and interventional services, and continual pressure by referring practitioners for flawless and immediate service.

The radiology department in most health care systems, is characterised as one of the most complex and cost intensive facilities (Joskow, 1981; Robinson, 1989). This is due to the continual expansion of diagnostic services and the requirement for specialist expertise and equipment to run the services. Due to the cost constraints imposed in public health systems, the conflict between keeping up with technical advances in ultrasound and controlling costs are particularly evident. For example in Britain, funding for public hospital ultrasound diagnostic services are commonly derived from acute services budgets which are under increasing financial restraint (Klein, 1987). The pressure to expand services in the midst of cost constraints makes decisions regarding service development difficult.

There are several factors contributing to the difficulty in administering radiology services in general. Technological developments impact on where and how procedures are carried out and the manner in which diagnostic information is communicated. These developments are likely to influence the expectations of customers in relation to ultrasound services. For example video and computer imaging can now provide immediate and comprehensive information. Providers will need to understand these developments, customer expectations of the service in relation to these developments and the possible implications of these advances on the way services are offered.

MAINTAINING STAFF EXPERTISE

Increased demands for expanding the service force managers to ensure the continual supply, recruitment and retention of specialized personnel who have necessary expertise to operate the equipment and carry out diagnostic procedures. This results in the need for increasingly sophisticated education and training opportunities for those responsible for carrying out ultrasound examination including radiologists, ultrasonographers and medical radiation technologists. Managers must ensure the availability of the specialisation and range of knowledge necessary to become skilled in all the currently practised investigative and therapeutic techniques. Due to continued developments in ultrasound

procedures, retraining has become necessary even for those who have been in consultant practice for a period of time. These concerns are supported by Brindle (1988) who states:

> "the inevitable diversification of radiology presents important problems in three fields; training, manpower and delivery of service (p 219)."

EXPANDING SERVICES

In addition to the need for highly skilled personnel and specialized equipment, the design and layout of the radiology services and facility are costly. The expansion of services involves strategic decisions. These decisions are dependent on the continued developments in diagnostic procedures and the need to coordinate specialised information to referring medical practitioners. For example, Lentle (1986) states that physicians must choose from an array of tests that sometimes seem to give conflicting results. Managers must weigh up the cost of new expensive ultrasound machines while establishing their present and future role in patient care.

INCREASING COMPETITION

Due to the impact of medical research and technological developments, ultrasound equipment is becoming more sophisticated. Increasing sophistication and availability of diagnostic technology means that there are more options from which customers may select. Referring medical practitioners are demanding a greater freedom of choice of how the diagnostic procedures are carried out. Today, referring medical practitioners can be more critical and selective in their use of diagnostic procedures. In the future, specialists will need to give increasing emphasis in transferring information and knowledge about service offerings to the referring practitioner.

Access, convenience, and effectiveness of communications are service features which may have an important bearing on the utilisation of the service by patients and referring medical practitioners. Utilization of diagnostic services by hospital versus community based medical practitioners has been emphasised in studies of diagnostic service management. Research suggests that with equal access to services, General Practitioners (GPs) are as equally responsible as hospital staff in their use of radiology services (Mair et al, 1974; Lindsay Smith, 1979; Wright et al, 1979; Haines et al, 1980; and Conry et al, 1986).

With increased technical sophistication, physicians have more choice as to where the consumption of diagnostic procedures will take place. These choices influence changes in the referral behaviour of physicians. Public hospitals, which previously had monopoly over all ultrasound diagnostic examinations, are now faced with competition from private hospital and medical practitioners in carrying out selected ultrasound procedures (Robinson 1989).

Increased availability of common ultrasound services in the private sector, creates potential sources of conflict for public hospital services. Dr. Bob Bury (1987), a consultant radiologist, believes that in many areas, GPs still find it difficult to get the degree of access to imaging facilities that they would like. Bury states that from the viewpoint of many radiologists, the responsibility lies with GPs for their lack of understanding the indications for, or limitations of, even the basic imaging investigations. Bury states that a contributing factor to the decrease in referrals from community based practitioners appears to be related to difficulties that staff in diagnostic services have in communicating with GPs, as opposed to hospital colleagues.

Sources of conflict relates to the extent of professional control over imaging services. The literature suggests that a greater number of medical practitioners are now carrying out common ultrasound procedures. Examples are given in the United States study by Levin (1989) to support this finding. A study of imaging or imaging-related procedures in 182 institutions found that the extent to which

non-radiologists carried out diagnosis and interpretation of ultrasounds, independent of radiologists, was higher in some areas than in others. Where at one time all imaging services were the responsibility of radiologists, there appears to be less professional control over how the services are offered.

Obstetrics is a dominant area in which ultrasound is used. The degree to which radiologists versus nonradiologists carry out obstetric ultrasound has been studied in 182 institutions in which obstetric ultrasound is practised. It was found that radiologists both perform and interpret the studies in 68% of cases. Obstetricians both perform and interpret the findings in 15% and in the remaining institutions, there is a shared arrangement between obstetricians and radiographers.

Radiologists and nonradiologists are both involved in carrying out vascular ultrasounds. Nonradiologists perform and interpret the diagnosis independent of radiologists in a large percentage (36%) of cases. Examples found by Levin (1989) suggest that there is likely to be increasing conflict over the professional control of radiologists over common ultrasound procedures. This has a major impact on where and how the services may be offered.

There is pressure on the administrators of radiology services to continually expand departmental specialist services, carry out traditional services and limit overexpenditure. These demands create difficulty when trying to identify the best approach to addressing quality assurance activities. Brindle (1988) adds that the balance between maintaining standards in general radiological services and the development of special radiological techniques is also difficult. Chairpersons and managers of radiology department must find ways to effectively demonstrate efficiency of services, maintain standards of services, maximize ultrasound capacity and continually work toward expanding services.

It is also important to establish the extent to which the outcome of the diagnostic procedure is found useful by referring practitioners. Few statistics are kept to show the frequency of ultrasound procedures for specific diagnosis or the action

which is taken as a result of the diagnostic findings. Effectiveness studies have been carried out to identify perceptions of medical practitioners toward the outcome of diagnostic services.

For example, Stoddart and Holl (1989) found that over 50% of radiological examinations carried out by hospital diagnostic services had some impact on patients' subsequent therapy or intervention, regardless of the pathology found. In addition, the researchers found that the outcome of hospital diagnostic examinations which included bariums, ultrasound, and intravenous urograms enabled the practitioners to avoid referring their patients to hospital.

The effectiveness of the diagnostic outcomes, as perceived by referring medical practitioners, is an important feature for consideration by ultrasound service management. In a study by Stoddart and Holl (1989) it was found that the reports helped in the diagnostic assessment in 97% of cases. The most common reasons were in confirming normality (42%) confirming a diagnosis (28%), or by excluding a specific diagnosis.

Another study examined perceptions of referring medical practitioners of the usefulness of diagnostic radiological procedures in general. It was found that in the majority of cases (57%) the reports influenced the patient's therapy or management. Actions which may be brought about as a result of the test report may include a change in diagnosis, change in therapy, change in prognosis, increased understanding of the disease or no change in course of therapy. A recommendation from this study by Stoddart and Holl (1989) is the need for development of referral guidelines for specific clinical circumstances to enhance quality of outcomes of radiological procedures.

COMMUNICATION ISSUES

Improvement in communication between radiologists and GPs is "a prerequisite for upgrading the service we offer to GPs" states Bury (1987, p 261). A variety

of quality attributes of ultrasound service may be related to communication between staff and medical practitioner. For example, Bury encourages the use of the diagnostic report form to provide a more comprehensive explanation as to the reasoning behind any change taken in carrying out ultrasound procedures.

Communication between health service providers and customers may result in communication which is perceived to be ineffective for some patients. One controversial issue relates to the role of the medical practitioner and the role of staff in providing pre and post procedure patient information and education. One such conflict involves the use of technology involving ultrasound in antenatal health services ("The Chronicle" 1989). J. Lambie, a previous Women's Hospital nurse manager states the following:

> "Antenatal scanning is being performed by more and more people unqualified to use it as an accurate diagnostic tool (The Chronicle, 14 July 1989)."

Because of this controversy, there is a growing awareness of the importance of informed consent in relation to obstetric ultrasound. Although the news media has given attention to this topic, the responsibility of medical practitioners and diagnostic technicians in providing patient information has not yet been clearly delineated. Confusion still exists over the role of the ultrasound staff versus the role of the medical practitioner in explaining potential effects of ultrasound. J. Lambie suggests that:

> "women were not being adequately or accurately informed that ultrasound could have adverse effects on human embryonic tissue in the long term. Women were therefore being denied the knowledge with which to give informed consent (The Chronicle, 14 July, 1989)."

Lambie expresses concern over the question of safety of the machinery used in diagnostic ultrasounds. She states:

> "notes for patients having ultrasound, inadequately addressed the questions ultrasound raised for consumers (The Chronicle, 14 July, 1989)."

Another concern involves patient information following the examination. The accuracy of the examination is dependent on factors such as the reliability of the equipment, the level of training and expertise of the person carrying out the exam, the positioning of the patient or the type of examination being carried out. These and other factors impact on the ability to detect and accurately interpret the ultrasonic waves on the film. If diagnostic outcomes are incorrect, there are implications for both health professionals and managers. The fact that there may be a possibility of an incorrect diagnostic outcome would influence determining who is responsible for communicating the diagnostic outcome to the patient or client.

Whether the patient's own medical practitioner or the technician who carries out the ultrasound communicates findings from ultrasound procedures is an issue of potential controversy. For example, in the private sector there is a trend towards giving patients immediate results along with video tape recordings of the ultrasound examination. There may be concern amongst radiologists, technicians and medical practitioners over what information is disclosed to the patient by the ultrasound staff, particularly in instances where findings may be abnormal. It is important for providers of the ultrasound service to know and understand customer views relating to this issue. Customers usually have some expectations about communications following ultrasound procedures and it is important for providers to give consideration to the views of customers.

The following communication issues may be of interest to ultrasound customers: information regarding safety of procedures and examination results; the extent of

patient information and education (e.g. informed consent); and information regarding potential average error rates in diagnostic findings.

Concerns faced by the staff in ultrasound also impact on service quality. Common concerns expressed by staff in radiology departments include the inability of the department staff to make available prompt (same day) reports for wards and outpatient clinics (De Campo and Boldt 1988). The study by De Campo and Boldt demonstrates that frustrations for clinicians, ward staff and radiology staff arose due to delays between the arrival of the request in the department and the availability of typed reports. In addition, there are concerns that tasks involving producing, filing and distributing reports from ultrasound staff are time consuming, repetitive, labour intensive, paper intensive and error prone. Studies indicate that frequent discussions with imaging subspecialists, rapid response to the results of completed tests, and close daily interaction between radiologists and surgeons are favourably perceived by referring practitioners (Baker and Stein 1986).

5.5 SUMMARY

It is becoming increasingly important to develop and provide diagnostic ultrasound service offerings that satisfy the needs of key customers. In pursuit of this objective, service providers will need to understand how customers choose and evaluate their service offerings. Problems associated with administering a highly specialized department with a wide range of diagnostic services, result in the need for managers to be clear about those services which are likely to be provided elsewhere, especially in local communities or the private health industry.

Numerous issues face managers of hospital ultrasound services. Some of these issues include the need to monitor future demand for hospital services, continued escalation in costs of providing services and the need to educate medical practitioners on available procedures and criteria when making referrals. The

literature on the management of radiology services was helpful in identifying features of the ultrasound service which are likely to be significant in relation to the customer evaluation of service quality.

The thesis now turns to the presentation of the practical research carried out in an operational setting which looks at users and providers expectations and perceptions of service quality. The exploratory research attempts to define features of service quality based on customer expectations of the service. Service features are identified from the literature on radiology and ultrasound services and through interviews with customers and providers of the service. Features rated as highly important are identified. An examination of the findings assists in evaluating service quality based on differences between expectations and perceptions of the service. The discussion which follows the practical research focuses on key issues which need to be realised when attempting to apply the conceptual model of service quality in the health industry.

CHAPTER 6
METHODOLOGY

6.1 INTRODUCTION

This section provides an overview of the research methodology. An evaluation of service quality is undertaken and service quality is defined on the basis of customer expectations. An emphasis is first placed on identifying user and provider perceptions of service quality features. This is an exploratory study that has, as its intention, identifying features of the service considered important to customers and identifying customer perceptions of the service based on a series of statements about these features.

In order to understand how the practical component of the research into perceptions of service quality is carried out, aspects of the study are reviewed including the following: research method; customer sample; survey components; and survey design. The initial stage of the research focused on the identification, wording and testing of a range of features of the service relevant to evaluations of service quality.

A number of possible research methods, including focus group and individual interviews, were considered prior to selecting the data collection process. The appropriateness of each method was assessed in light of the nature of the study and characteristics of the customer group. The process of designing the survey for this type of study was complex due to the nature of the service, the range of features of service quality and characteristics of the customer group.

In studying the ultrasound service, the initial problem that needed to be overcome was in identifying the direct customers of the service. Initially, the primary customers were thought to be the patients who are the subject of the ultrasound examination. Once the investigation into the service began, it was found that the primary customers of the service were not the patients, but the medical

practitioners who referred the patients to the service. It became evident that ultrasound is a support service for medical practitioners who require information to diagnose a health related problem.

The ultrasound examination is part of a diagnostic service package offered from a medical practitioner to the patient. As previously discussed, medical practitioners are the gatekeepers between the patients and the ultrasound service providers. This is an exploratory piece of research and the emphasis is placed on the service exchange between the ultrasound service provider and the medical practitioner. In that the exchange relationship is complex, the intention is not to examine the possible interactions or relationships between the three groups. Further work needs to be undertaken to examine the relationship between the service provider, the medical practitioner, and the patient. In addition, work is needed to identify perceptions of service quality as perceived by the patient or beneficiary of the ultrasound service.

6.2 SURVEY DESIGN

The sample population consists of professionals who work in a large geographical area. Therefore the process of data collection needed be expedient in reaching customers throughout the hospital district. The range and diversity of survey questions needed to be comprehensive to ensure the questions represented interests of medical practitioners from different specialty areas who refer to ultrasound. Features of quality unique to the diagnostic industry needed to be incorporated in the survey statements. In addition, the format had to be easily and expediently completed by the customer group.

Two primary methods of investigation were used in constructing the survey. The basis for the development of the survey was an examination of the literature and preliminary interviews with customers and providers. The literature analysis focused on health service and marketing management. The preliminary study involved a pilot test of the survey and follow-up interviews with hospital and

community based medical practitioners and service providers. This preliminary research helped to ensure that the survey items assessed relevant aspects of the diagnostic service.

In order to ensure the questions are asked in a way that the design of the questionnaire did not disrupt the 'flow' of the respondent's answer, the survey is divided into two sections. The first section uses a scale on the level of agreement to each statement and the second section uses a scale on the level of importance given to each statement.

The item scale consists of several categorical measures (e.g. reporting-time measures) and other standard Likert-style responses. An agreement scale is used to measure perceptions of respondents and an importance scale is used to measure expectations. This criteria for analysis is listed in Table 6.1. The customer group consists of medical practitioners from various specialist areas with different levels of experience with the service, therefore a seven-point scale was used. Two categories outside the traditional opinion scale including (1) 'Not Applicable' and (2) 'Don't Know' are also included in the seven-point scale.

Table 6.1 Criteria for Analysis

agreement	=	perceptions of respondents regarding the service offering
importance	=	level of expectation of the service feature

An extensive demographic component was included in the survey. The demographic component is used to establish a profile of the respondents. Examples of variables included are the following: commonly requested procedures, familiarity with service, extent of inservice education on ultrasound, and location. Key issues which have been extracted from the demographic data can be found in the results portion of this study.

Respondents were asked to identify the level of importance (expectations) of each statement in relation to ultrasound service and level of agreement (perceptions) of each statement. The forced choice survey attempted to distinguish perceptions of respondents in relation to each of forty-four features of service quality. In addition, comments were sought from customers and providers on areas where service quality may be improved.

6.3 THE PILOT

The survey format was tested and revised during a pilot study through which information was obtained from customers and providers of the service. It is interesting to note that when the pilot study was carried out, few respondents provided written comments about areas for improvement on the individual survey form. However, during follow-up discussions with those participating in the pilot study, the majority of the professionals freely discussed issues and concerns relating to quality in ultrasound services. In the pilot study, the respondents appeared more willing to offer suggestions for service improvement verbally than in writing.

Subjective information gained from the pilot study has been coded and analysed and findings are included in this study. From interviews and the preliminary research, the researcher felt that key areas needed to be consider when assessing ultrasound service quality. These elements are listed in Table 6.2. The final survey consisted of a total of 44 pretested items.

Table 6.2 Service Quality Elements

(a)	access
(b)	technically advanced
(c)	professionalism
(d)	training and support
(e)	reports and communication
(f)	staff relations
(g)	orientation towards needs of medical practitioners.

6.4 SURVEY DISTRIBUTION

The distribution of the survey was then carried out after reviewing lists of medical practitioners who are likely to make referrals to ultrasound. The customer list was drawn from a register of all those medical practitioners practising in the vicinity of the hospital. The customer sample used in this study, comprised all the medical practitioners who potentially make referrals to the hospital's ultrasound department.

The survey was distributed to postal addresses of individual medical practitioners who work in a variety of settings. Medical practitioners may work independently in the community, as general practitioners in group practice or in hospitals. The survey was also distributed to providers of the service. A total of 141 medical practitioners and 9 providers formed the final sample.

The first survey was mailed in August 1990 and a follow-up survey in September 1990. Appendix 1 includes a copy of the survey. Enclosures with the survey include a cover letter and a postage-paid reply envelope. Approximately four weeks following the initial mailing, the second survey was distributed, along with a letter encouraging medical practitioners to participate in the study. Data collection ended four weeks after this second mailing.

6.4 LIMITATIONS

One limitation of the study design includes the length and format of the survey. The survey required feedback on two dimensions of each of forty-four service quality features, thus making the survey time consuming to complete. The length of the survey may have had impact on the response rate. Limiting the number of features would have reduced the length of the survey and may have resulted in an increased response rate.

To enhance the utilisation of survey information by providers, it is important to ensure questions in customer surveys are specifically focused. The statements need to be specific enough to be acted upon by staff. Further work is necessary to test whether statements are specific enough to be considered useful by service providers. It may be found that in the operational setting of the ultrasound service, that the statements are too vague, limiting their usefulness or relevancy.

The research did not attempt to identify why gaps between providers and customers perceptions may be present, nor does the study attempt to ascertain possible strategies service providers may undertake to close these gaps between expectations and experience. Further research is needed in this area. Studies are also needed to look at the gap analysis and the conceptual model of service quality developed by Parasuraman et al (1985) in the context of the operational setting.

Due to the small size of the provider group, and the relatively small size of the customer group who responded to the survey, the findings are unable to be generalised across other industries or service sectors. This was the first study of its kind in relation to the ultrasound service. Further comparative research is needed to identify perceptions of customers and providers of ultrasound service on features of service quality, and the range and importance of these features offered from different public hospitals.

CHAPTER 7
RESULTS

7.1 INTRODUCTION

This section concentrates on the presentation of the findings from the study of customer and provider perceptions of service quality. The discussion begins with a profile of the respondents. Data from the survey is systematically analysed. Findings based on percentage response rates are presented and the analysis looks at a comparison of expectations and perceptions. The discussion focuses on presenting the study's findings and identifying features which may be of concern for managers when trying to improve service quality.

RESPONSE RATES

Survey data was collected from 74 customers of the ultrasound service offered by a public hospital (a 53% valid response rate). Seven providers returned the survey including clerks, qualified and unqualified medical radiation technologists, an ultrasonographer and radiologists (a 78% valid response rate.) The response rates are presented in Table 7.1.

Table 7.1 Respondent Profile

Customers	Providers
Total = 74	Total = 7
54% valid response rate	78% valid response rate

60% of the medical practitioners responding to the questionnaire work in the hospital. Of these, 50% are consultants. The other 40% of the customer respondents work in community practices, primarily as General Practitioners in partnership or independent practice.

Table 7.2 Customer Profile - Position Held

60% Hospital Based Medical Practitioners

- 50% Consultants
- 50% Other

40% Community Based Medical Practitioners

- 35% General Practitioners in independent practice
- 33% General Practitioners in partnership
- 32% Other

CUSTOMER RESPONDENT PROFILE

College memberships are higher professional qualifications held by some medical practitioners. The majority of the medical practitioners belong to the College of General Surgery and General Practice. The rest of the respondents hold a diversity of college memberships. These include for example, Cardiology, General Medicine and Opthamology.

As illustrated in Table 7.3, 41% of respondents have been working in their present job category (e.g. as General Practitioner or Consultant) for eight years or more.

Table 7.3 Years in Current Job Category

12%	0-1 years
24%	2-4 years
24%	5-7 years
41%	8 years or more

Medical practitioners were asked how long they had worked in their present position (e.g. in Palmerston North hospital). 32% of the respondents have been in their present position eight years or more and 28% have worked in their position from two to four years. Consequently over 80% of respondents have spent 2 or more years in their present position as illustrated in Table 7.4.

Table 7.4 Years in Present Position

-	19%	0-1 year
-	28%	2-4 years
-	21%	5-7 years
-	32%	8 years or more

82% of the medical practitioners responding to the survey work in the same city as the hospital. The rest of the respondents work in the surrounding areas.

Table 7.5 illustrates the finding that inservice training or seminars on ultrasound in the last five years has been received by 40% of the respondents.

Table 7.5 Inservice Training

40%	Received inservice training in last five years
60%	Received no inservice training in last five years

The majority of respondents are between thirty and fifty years of age. 74% of the respondents are male and 26% female.

TYPES OF REFERRALS

In relation to the obstetric ultrasound, 27% refer at least half of their obstetric referrals to the public service. 18% of those responding make all of their referrals to the public service for obstetric ultrasound. It was found that 57% of those responding make an average of one referral per month for obstetric ultrasound. These figures are highlighted in Table 7.6. Suprisingly 12% of respondents refer between 10 and 50 times per month for obstetric ultrasound.

Table 7.6 Referrals to Obstetric Ultrasound

Percentage of total sample	
- 27%	state that at least half of customers obstetric referrals are sent to public service
- 18%	state that all obstetric referrals are sent to public service.
- 57%	state that at least one obstetric referral per month is sent to public ultrasound service,
- 12%	state that 10-50 obstetric referrals per month are sent to public ultrasound service.

(note: percentages add up to > 100 because there are multiple responses)

At least one referral per month to non-obstetric public ultrasound service is made by approximately three-quarters of those responding. 37% send all of their nonobstetric referrals to public service. Over 70% refer the majority of their non-obstetric patients to the service. The majority (61%) refer between one and five patients per month. These figures are illustrated in Table 7.7.

Table 7.7 Referrals to Non-obstetric Ultrasound

Percentage of total sample	
- 70%	state that between 50 - 100% of non-obstetric referrals are sent to public ultrasound service
- 37%	state that they send all non-obstetric referrals to public service
- 61%	state they make 5-10 referrals per month to the ultrasound service
- 75%	state they make at least one referral per month to the public non-obstetric ultrasound service

(note: Percentage adds up to > 100 because there are multiple responses)

At least one acute or urgent referral per month is made by the majority of those responding (64%). 27% state that over half of their referrals to the public ultrasound service are for acute or urgent referrals and 32% state that between 5 and 20% of their referrals are for urgent or acute examinations. Information relating to urgent or acute referrals is listed in Table 7.8.

Table 7.8 Urgent Referrals

Percentage of total sample	
- 64%	state that one urgent referral is made per month
- 27%	state that half of all referrals are urgent
- 32%	state that between 5-20% of referrals are urgent

(note: Percentage adds up to > 100 because there are multiple responses)

Types of referrals which are made to the ultrasound service are listed from high to low in descending order in Table 7.9.

Table 7.9 Referrals Made to Ultrasound Each Month

Listed from High to Low in Descending Order of Frequency

(1) Obstetric

(2) Upper Abdomen

(3) Gynaecological

(4) Cardiac

(5) Paediatrics

(6) Small Parts

Other types of referrals which were commonly identified by respondents include renal, abdomen, lung, chest and pelvis.

7.2 CUSTOMER RESPONSES

One issue stood out as being considered most important by the customer respondents. 69% of respondents indicate that the following issue is very important:

- radiologists promptly advise referring medical practitioners when urgent follow-up is necessary

The above issue was considered most important by customer respondents. All of the statements in the survey were rated as important by referring medical practitioners.

For the purpose of the presentation of the findings, the service quality features have been divided into five categories based on managerial, clinical and patient related issues.

Table 7.10 Service Quality Features

	PATIENT ISSUES
1.	**Patient responsiveness;** including factors such as convenience, information and communication requirements.
	CLINICAL ISSUES
2.	**Clinical assurance**
	MANAGERIAL ISSUES
3.	**Management ability,** e.g. efficiency, cost-conscious.
4.	**Customer responsiveness;** including issues such as awareness of customer information and communication requirements.
5.	**Customer orientation regarding service development;** Orientation towards customer requirements regarding service offerings.

The findings of the analysis of importance (expectation) and agreement (perception) ratings based on features of service quality are presented in the following discussion. The statements have been grouped according to the features in Table 7.10. Responses are reported according to levels of importance and scales of agreement, for example high or low importance rating and high or low agreement ratings. The first number following each statement is the percentage of respondents who rate the feature according to the different levels of importance or agreement.

THE RATING SCALE

The mean agreement/importance ratings are calculated by summing the individual score and dividing by the sample size. A complete table of average rating scores is provided in Appendix 5.

A scale of zero to five was used to identify the level of agreement/importance. The lowest value of zero indicates totally agree and the highest value of five indicates totally disagree. Similarly the lowest value of zero indicates very important and the highest value of five indicates very unimportant.

It was found in some cases that there were high proportions of respondents reporting that they "don't know" or have a lack of knowledge about their perceptions of the service performance.

PATIENT RESPONSIVENESS

High Importance Ratings

In relation to patient responsiveness, issues which were considered important by the majority of respondents and given high ratings are:

- readily available appointments (100%, 1.4)
- staff provide patient information prior to procedure (94%, 1.7)
- staff intervention with anxious patients (93%, 1.8)
- staff ensure patient privacy and confidentiality (92%, 1.5)

Low Importance Rating

The lowest rating in this section was in relation to **convenience of location for outpatients** (74%, 2.1).

High Agreement Rating

Respondents were asked to indicate their level of agreement based on each statement. The following are those statements which received high percentage ratings of performance (high agreement ratings) by the respondents:

- acceptable scheduling of patient appointments (80%, 2.3)
- ultrasound procedures rarely upset patients (70%, 2.3)
- staff always ensure patient privacy (53%, 2.6)
- staff provide necessary information to patients before procedure (52%, 2.1)
- location of service is convenient for outpatients (52%, 2.0)

Although the feature **staff always ensure patient privacy** had 53% of respondents agreeing with the statement, the mean score was 2.6 which was in line with some statements that had lesser agreement percentages amongst respondents.

Low Agreement Ratings

The statements **staff always anticipate and intervene with anxious patients** (20%, 2.6) and **patient information is provided following tests and procedures** (20%, 2.5) received the lowest percentage agreement ratings in this section.

Lack of Knowledge

Many respondents indicated they didn't have an opinion of the service performance in relation to specific statements. This may be due to a lack of information or awareness amongst respondents about the service feature. Respondents indicate a lack of opinion in relation to the following features:

- staff intervention with anxious patients (60%)
- patient information following procedures (52%)
- consistency of positive patient interactions (45%)
- patient privacy and confidentiality (40%)
- convenience of appointments (37%)

CLINICAL ASSURANCE

High Importance

In relation to clinical assurance, the following statements are rated high in importance by respondents:

- appropriate upgrading of equipment in view of cost constraints (100%, 1.6)
- staff are well trained in using equipment (100%, 1.6)
- reports accurately address the clinical questions (96%, 1.6)
- staff have relevant patient information to carry out procedures (96%, 1.6)

Low Importance

Receiving a slightly lower importance rating was the statement relating to **informed consent** (64%, 2.1).

High Agreement

In relation to clinical assurance, there was a high level of confidence (84% agreement) that reports accurately address the clinical questions. The following list indicates those statements receiving higher percentage agreement ratings by the respondents:

- reports accurately address the clinical questions (84%, 1.9)
- diagnostic outcomes are appropriately reviewed (49%, 2.3)
- diagnoses are consistently accurate (46%, 2.9)
- there is appropriate upgrading of equipment in view of cost constraints (45%, 2.1)
- staff are well-trained in using equipment (45%, 1.9)

Low Agreement

Lower levels of agreement in this area were found with the statements regarding **patient information prior to procedures being carried out** (26%, 2.9); **informed consent** (21%, 3.0); and **monitoring of radiologists** (28%, 2.1).

Disagreement

There was some level of disagreement in relation to the following statements:

- adequate monitoring of radiologists (28% disagree)
- staff have adequate patient information to carry out procedures (22% disagree)

Lack of Knowledge

High numbers of respondents indicate they don't have an opinion of their perceptions of statements relating to clinical assurance. This may indicate a lack of awareness or lack of information about the service feature. The following statements received high proportions of "don't know" responses:

- monitoring of radiologists (66%, 2.1)
- upgrading of technical equipment (59%, 2.1)
- staff keep up-to-date with technical advances (50%, 1.9)
- training in use of equipment (49%, 1.9)
- staff should better ensure informed consent is obtained (43%, 3.0)

MANAGEMENT ABILITY

High Importance

Smooth and efficient operations and awareness of costs of procedures were considered important issues in relation to managerial features. The following issues were rated high in percentage importance ratings amongst customer respondents:

- the service runs smoothly and efficiently (58%, 1.7)
- staff work efficiently (41%, 1.7)
- staff have necessary information on costs of procedures (67%, 2.1)

Although the feature **staff have necessary information on costs of procedures** was given high percentage importance (67%) by respondents, the average mean rating score was only 2.1.

Low Importance

Respondents rated the following features as slightly lower in importance:

- delays in reporting outcomes to patients are caused by careless attention to processing reports (37%, 2.1).
- expanding hours of service would not be feasible due to cost constraints (34%, 2.7)

High Agreement

Receiving high agreement ratings are the statements **the service runs smoothly and efficiently** (58%, 2.2) and **staff work efficiently** (41%, 2.1).

Low Agreement

Low percentage agreement ratings of the service performance were found in relation to the following:

- delays in reporting outcomes to patients are caused by careless attention to processing by staff (5%, 2.4)
- expanding hours of service would not be feasible due to cost constraints (4%, 2.6)

Disagreement

49% of customer respondents disagree that **delays in reporting diagnostic outcomes of ultrasound is caused by careless attention to processing by staff.**

Lack of Knowledge

The vast majority (85%) respond that they don't know whether **staff have necessary information on costs of procedures.** Many respondents (43%) don't know whether **expanding hours of the service would be feasible.** In addition, many respondents don't know (49%) or disagree (38%) that there is careless **attention to processing reports amongst ultrasound staff.**

CUSTOMER RESPONSIVENESS

High Importance

Overall, features relating to customer responsiveness were rated high in importance amongst respondents. In two cases, 100% of respondents indicated that the statement is important. The following are those issues given highest percentage importance ratings:

- radiologists promptly advise medical practitioners when urgent follow-up is needed (100%, 1.3)

- advise is readily available were requested by referring medical practitioners (100%, 1.6)

- staff provide medical practitioners with information to prepare patients for u/s tests and procedures (93%, 1.9)

- staff are friendly and courteous (93%, 1.8)

- radiologists are available for specialised procedures (90%, 1.6)

Low Importance

In this category the statements that were given the lowest percentage importance rating are as follows:

- medical practitioners need more information on staff role in advising on selection of appropriate investigations (67%, 2.1)

- more obstetric medical practitioners should be trained to carry out ultrasound procedures by staff (14%, 3.3)

The low rating in relation to **training of obstetric medical practitioners** may be due to a lack of relevancy.

High Agreement

In many instances, higher agreement ratings indicate customers have positive perceptions about the service performance. In relation to issues about customer responsiveness, the following statements received high percentage agreement ratings:

- advice regarding ultrasound is readily available on request (86%, 2.1)

- staff are friendly and courteous (81%, 2.2)

- medical practitioners need increased education from staff on common investigations to ensure appropriate use of service (76%, 1.5)

- radiologists promptly advise referring medical practitioners when urgent follow-up is needed (75%, 2.1)

Low Agreement

Low levels of agreement were found in relation to the following statements:

- staff actively encourage medical practitioners to learn more about available services (28%, 2.4)

- staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested investigations (27%, 2.4)

- more obstetric medical practitioners should be trained to carry out u/s procedures by staff (22%, 2.6)

- there are frequently delayed diagnosis which adversely affect patient care outcomes (10%, 3.8)

These low levels of agreement may be due to lack of knowledge about service performance based on the feature, disagreement with the service statement or dissatisfaction with the service performance.

Disagreement

In this section, several instances were identified where respondents disagree with the statement. Areas where respondents disagree are:

- there are frequently delayed diagnosis which adversely affect patient care outcomes (71% disagree)

- delays in reporting ultrasound outcomes to patients are caused by careless attention to processing reports (49% disagree)

- staff actively encourage medical practitioners to learn more about available services (37% disagree)

- staff provide adequate clinical guidelines to prepare patients for common examinations (32% disagree)

- more obstetric medial practitioners should be trained to carry out ultrasound procedures by staff (24%)

Lack of Knowledge

High numbers of respondents indicate a lack of knowledge of the service performance in relation to the following features:

- there is adequate monitoring of radiologists (66%)

- staff are well trained in using equipment (49%)

- radiologists are available to competently carry out all specialised procedures (40%)

- more obstetric medical practitioners should be trained to carry out ultrasound procedures (29%).

On the whole, medical practitioners want more education and more information from the ultrasound staff so that they can better use the service. This involves:

- advise on selection of the appropriate investigation

- education on common investigations

- information for patient preparation

CUSTOMER ORIENTATION REGARDING SERVICE DEVELOPMENT

High Importance

All the features relating to customer orientation in service development are considered important by medical practitioners. The following statements received higher levels of importance ratings:

- staff encourage and respond to feedback from referring physicians to improve the service (91%, 1.7)
- there is close collaboration between radiologists and hospital-based medical practitioners (90%, 1.5)
- there is close collaboration between radiologists and community-based practitioners (86%, 1.7)

Low Importance

Lower expectations (percentage importance ratings) were found in relation to the following statements:

- integration of ultrasound service planning amongst other services (77%, 1.8)
- consideration of ethical issues when developing services (69%, 2.0)
- appropriateness of expanding of services (69%, 1.9)

High Agreement

Respondents indicate higher levels of satisfaction in relation to the following features:

- there is close collaboration between radiologists and hospital-based medical practitioners (55%, 2.1)
- expansion of ultrasound services have been appropriate (48%, 2.3)

Low Agreement

Statements which received lower percentage importance ratings in relation to service performance include **ultrasound service planning is well integrated with other service planning** (21%, 2.4); **there is close collaboration with community practitioners** (11%, 3.2); and **ethical considerations are addressed effectively when developing services** (7%, 3.2).

None of the respondents indicated that they agree with the statement **institutional managers regularly consult with referring medical practitioners when planning services** (4.4 rating).

Dissatisfaction

A small group of respondents indicated some dissatisfaction with three elements in relation to customer orientation. These include **consultation with customers when planning services** (24% disagree); **collaboration between radiologists and community-based practitioners** (19% disagree); and **encouragement of customer feedback for improving services** (15% disagree).

Lack of Knowledge

The following statements had a proportion of respondents who indicated they lack knowledge about the service performance. These statements are:

- ethical considerations are addressed when developing services (69%)
- ultrasound service planning is well integrated with other service planning (66%)
- institutional managers regularly consult with referring practitioners when planning services (55%)
- there is close collaboration between radiologists and community practitioners (45%)
- expansion of services have been appropriate (35%)
- staff encourage and respond to feedback from referring practitioners to improve the service (33%)
- there is close collaboration between radiologists and hospital-based medical practitioners (30%)

On the whole, the results indicate that customers have less knowledge about the performance of the service in relation to service development than any other area.

COMPARISON BETWEEN HOSPITAL AND COMMUNITY PRACTITIONER RESPONSES

An analysis of the survey findings defined differences between the group of hospital and the group of community based respondents. Differences were found in relation to the amount of time that has been spent working in the present position and the extent of inservice education received in relation to ultrasound diagnostic examination. Overall the group of hospital practitioners have spent less time in their present position. Greater percentages of hospital respondents (57%) have spent between 0-1 years in their present position as compared with community-based respondents (37%). Community practitioners received less

ultrasound inservice education than their hospital counterparts. In the last five years inservice education has been received by 26% of community practitioners as compared to 40% of hospital-based medical practitioners.

Importance Ratings

Hospital and community practitioners share in common opinions regarding the level of importance of each of the forty-four features of service quality. The findings suggest that overall, hospital and community practitioners view all the features as important. A comparison was carried out between the importance ratings of hospital and community respondents. Few contrasts could be identified between groups of hospital and groups of community practitioners in relation to expectations (importance ratings) of the service.

Agreement Ratings

The comparison between hospital and community practitioner responses indicates that there are several areas where differences exist between perceptions of service quality (level of agreement). In general, differences in opinion were found between hospital and community practitioners in relation to the quality of information, education and clinical guidelines. Table 7.11 presents percentages based on a comparison between the group of hospital and the group of community medical practitioners. The figures presented in Table 7.11 illustrate that larger percentages of hospital-based respondents have higher levels of satisfaction with service performance (higher percentage agreement ratings) based on features such as **keeping up-to-date with latest technologies** and upgrading of **technical equipment** than did community-based practitioners. In contrast community practitioners indicate higher levels of satisfaction with service performance based on features such as **consistently accurate diagnoses** and **adequate monitoring of radiologists** than did hospital practitioners. Information presented in Table 7.11 may assist managers of the ultrasound service in targeting areas for service improvement.

Table 7.11 Hospital versus Community
Percentage Rating Scores

Statement	% Hospital Agreement	% Community Agreement
medical practitioners need increased education on common u/s investigations to improve patient preparation.	57%	75%
medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service.	70%	86%
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations.	21%	38%
the u/s service runs smoothly and efficiently.	77%	38%
there is close collaboration between radiologists and hospital-based medical practitioners.	82%	50%
there is close collaboration between radiologists and community-based medical practitioners.	6%	14%
u/s staff encourage and respond to feedback from referring physicians to improve the service.	52%	14%
u/s staff keep up-to-date with latest relevant technologies.	52%	23%
there is appropriate upgrading of u/s technical equipment in view of cost constraints.	49%	6%
u/s diagnoses are consistently accurate.	36%	17%
outcomes of u/s diagnosis are appropriately reviewed.	56%	37%
there is adequate monitoring of radiologists.	36%	14%
u/s staff are well trained in using equipment.	59%	24%
location of u/s is convenient for outpatients.	77%	40%
u/s staff provide necessary information to patients following tests and procedures.	61%	7%

COMPARISON BETWEEN CONSULTANT VERSUS NON-CONSULTANT RESPONSES

The data was analysed to determine possible differences in responses between those respondents who are consultants and those who are non-consultants. It was found that, on the whole, consultants have spent a longer period of time in their job category than non-consultants. 85% of consultants compared to 55% of non-consultants have spent five years or more in their job category. This is illustrated in Table 7.12.

Table 7.12 Consultant versus Non-consultant Years in Job Category

Consultants	14%	=	0 - 4 years
	85%	=	5 years or more
Non-Consultants	45%	=	0 - 4 years
	55%	=	5 years or more

Generally speaking, consultants have also spent a longer period of time in their present position than have non-consultants. 77% of consultants compared to 40% of non-consultants have spent five years or more in their present position. This comparison is illustrated in Table 7.13.

Table 7.13 Consultant versus Non-consultant Years in Present Position

Consultants	23%	=	0 - 4 years
	77%	=	5 years or more
Non-Consultants	60%	=	0 - 4 years
	40%	=	5 years or more

It was also found that a greater percentage of consultants are male. 95% of consultants are male whereas only 65% of non-consultants are male.

Importance Ratings

A comparison of consultant versus non-consultant responses revealed few differences in relation to importance ratings (expectations). The one exception is the statement that **more obstetric medical practitioners should be trained to carry out ultrasound procedures by ultrasound staff.** Non-consultants rated this issue higher in importance than consultants. None of the consultants rated this issue as important whereas 21% of non-consultants see the issue as important. This data relates to the finding that a greater proportion of consultants (50%) compared to non-consultants (10%) view this statement as non-applicable.

Level of Agreement

The comparison between findings of consultant and non-consultant respondents indicates that consultants, generally speaking, may have higher perceptions of service performance in relation to a number of features. Service performance in relation to quality features such as **monitoring of radiologists, staff training on using equipment,** and **staff communications with medical practitioners** were rated higher by consultants compared to non-consultants. Consultants rated service performance higher in relation to management and service development issues. Consultants appear to be more satisfied with the extent of staff-customer consultation and communications. The detailed comparison of percentages in agreement between the group of consultants and non-consultants is presented in Table 7.14.

Table 7.14 Comparison Between Consultant and Non-Consultant Responses

Statement	% Consultant Agreement	% Non-Consultant Agreement
expanding hours of u/s service would not be feasible due to cost constraints	18%	36%
location of u/s is convenient for outpatients	72%	52%
there is adequate monitoring of radiologists	59%	32%
u/s staff are well trained in using equipment	57%	21%
u/s staff should better ensure informed consent is obtained prior to carrying out procedures	31%	15%
more obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff	9%	28%
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	18%	31%
there is close collaboration between radiologists and hospital-based medical practitioners	86%	41%
u/s staff actively encourage and respond to feedback from referring physicians to improve the service	72%	23%
medical practitioners are given full attention by the u/s staff when u/s staff interact with them	81%	61%
u/s staff are friendly and courteous	95%	73%
u/s staff have necessary information on costs of procedures	22%	6%
u/s staff work efficiently	68%	28%
u/s service planning is well integrated with other service planning	50%	8%
institutional managers regularly consult with referring medical practitioners when planning u/s services	31%	16%
ethical considerations are addressed effectively when developing and planning u/s services	31%	10%

PROVIDER RESPONSES

A small number of staff work directly in the ultrasound service at the hospital. The following is a presentation of the analysis of the findings from the seven of the nine providers who responded to the survey (a 78% valid response rate). It is important to note that **no surveys were returned** from the hospital or service managers who are not directly involved with the delivery of the ultrasound services (not direct providers) but are managerially responsible. Managers declined to participate in the study while indicating that they lacked relevant knowledge of the service to complete the survey. This in itself may well be a service gap which should be overcome.

It is important to consider when reviewing these findings that some respondents were not familiar with some of the clinical issues in the service. For example some respondents rated statements such as **monitoring of radiologists** or **accuracy of diagnostic outcomes** as "not applicable." This is understandable in the case of non-medical respondents.

PATIENT RESPONSIVENESS

High Importance

There were high percentage ratings of expectations (importance) in relation to all patient responsiveness issues however the following statements were considered most important:

- patient appointments are available within acceptable period of time (100%, 1.7)
- staff always ensure patient privacy and confidentiality (100%, 1)
- staff always anticipate needs of anxious patients (100%, 1.3)
- patient waiting time for examination is acceptable (100%, 2)
- location of service is convenient for outpatients (100%,1.9)
- staff-patient interaction is consistently positive (100%, 1.9)

Low Importance

None of the statements in this category received low importance ratings by provider respondents.

High Agreement

Provider perceptions of the service performance (level of agreement) was highest in relation to the following statements:

- patient waiting time for examination is acceptable (100%, 1.0)
- staff always ensure patient privacy (100%, 1.6)
- patient appointments are available within acceptable period of time (100%, 1.6)
- staff provide patients with necessary information before administering procedures (100%, 1.9)

Low Agreement

61% of respondents indicate they agree that **patients rarely become upset as a result of the ultrasound procedures** (2.4 rating). 29% of respondents indicate that they disagree with this statement.

CLINICAL ASSURANCE

High Importance

All of the providers have high expectations of the service in relation to the following statements:

- staff are well trained in using equipment (100%, 1)
- reports accurately address the clinical questions (100%, 1.3)
- staff have all relevant patient information to carry out procedures (100, 1.3)
- diagnoses are consistently accurate (100, 1.4)
- outcomes of diagnosis are appropriately reviewed (100, 1.5)

Low Importance

Only 43% of providers indicate the following features are important; **staff should better ensure informed consent is obtained prior to carrying out procedures** (1.8 rating); **there is adequate monitoring of radiologists** (1.0 rating). The low percentage response rates may relate to the fact that half the respondents indicated that the statement is "not applicable" or that they lack knowledge about this service feature.

High Agreement

100% of provider respondents indicate high levels of satisfaction of the service performance in relation to the following statements: **staff are well trained in using equipment** (1.0 rating); **reports accurately address the clinical questions** (1.3 rating).

Low Agreement

Statements which received a lower percentage of agreement include the following: **staff should better ensure informed consent is obtained** (17%, 3.0); and **diagnoses are consistently accurate** (33%, 2.3). 50% of the respondents indicate they lack knowledge about this service feature.

MANAGEMENT ABILITY

High Importance

All of the providers have high expectations (percentage importance ratings) regarding managerial features of the service including **efficient operations.**

Low Importance

The following statements received lower percentage ratings of importance:

- expanding hours of service would not be feasible due to cost constraints (33%, 2.8)
- delays in reporting outcomes to patients are caused by careless attention to processing reports (28%, 1.5)

High Agreement

All provider respondents agree that **the service runs smoothly and efficiently** and that **staff work efficiently** (1.9 rating).

Disagreement

86% of provider respondents disagree with the following statements:

- there are frequently delayed diagnosis which adversely affect patient care outcomes
- delays in reporting outcomes to patients are caused by careless attention to processing reports by staff

These results are consistent with the high agreement ratings with the statements **the service runs smoothly and efficiently** and **staff work efficiently.**

CUSTOMER RESPONSIVENESS

High Importance

Respondents have high expectations regarding the following features of the service:

- radiologists are available for specialised procedures (100%, 1.3)
- advice is readily available on referring medical practitioner request (100%, 1.3)
- radiologists promptly advise referring practitioners when urgent follow-up is needed (100%, 1.1)
- staff provide medical practitioners with necessary information to prepare patients for procedures (100%, 1.6)

Low Importance

The following statements received lower importance percentage scores:

- more obstetric medical practitioners should be trained to carry out ultrasound procedures (33%, 2.8)
- there are frequently delayed diagnoses which adversely affect patient care outcomes (50%, 1.0)
- staff actively encourage medical practitioners to learn more about available services (57%, 2.5)

High Agreement

The following statements received high percentage agreement ratings by service providers:

- staff are friendly and courteous (100%, 1.7)
- staff provide medical practitioners with necessary information to prepare patients for procedures (100%, 1.7)
- radiologists are available to carry out specialised procedures (100%, 1.7)
- radiologists promptly advise medical practitioners when urgent follow-up is needed (100%, 1.6)

Low Agreement

Statements which received low percentage agreement ratings are:

- there are frequently delayed ultrasound diagnoses which adversely affect patient care outcomes (0%, 3.5)
- staff actively encourage medical practitioners to learn more about available services (43%, 2.6)

CUSTOMER ORIENTATION REGARDING SERVICE DEVELOPMENT

High Importance

100% of providers indicate statements including **there is close collaboration between radiologists and hospital-based practitioners** (1.3 rating) and **staff encourage and respond to feedback to improve the service** (1.6) are important.

Low Importance

57% of respondents believe the following statement to be important; **institutional managers regularly consult with referring practitioners when planning ultrasound services.** However this statement still had a mean rating of 1.3 on the 0 - 5 scale indicating respondents gave this statement very high importance ratings.

High Agreement

All the providers indicate high percentage agreement ratings in relation to the following areas of service performance: **there is close collaboration between radiologists and hospital practitioners** (100, 1.9), and **staff encourage and respond to feedback** (100, 1.6).

7.4 THE GAP ANALYSIS

The gap analysis represents global judgements of customers about individual features of service quality made across multiple encounters (Parasuraman et al 1985). The model of service quality focuses on the magnitude and direction of "gaps" of customer expectations-experiences discrepancies.

The perceptions of professionals most directly influence the design and delivery of the services offered suggests Brown and Swartz (1985), whereas consumer perceptions are the basis of evaluating the services received. Managers would be concerned about the views of both parties when attempting to understand and ensure service quality.

A gap analysis was carried out to identify perceptions of the customers and providers of the ultrasound service. This study focused on the gaps between customer expectations - customer perceptions and provider expectations - provider perceptions of each of forty-four features of service quality. The overall findings suggest that the customer group have larger gaps between expectations (importance) and perceptions (agreement) than did the provider group. The average gap scale for each of the forty-four features is listed in Appendix 2.

THE AVERAGE GAP

The average gap for each feature was calculated as follows: The gap between perception (agreement) and expectations (importance) for each service quality feature was calculated based on individual responses. This calculation is illustrated in Table 7.15.

Table 7.15 Calculation of the Average Gap

$$\frac{\sum (I_i - A_i)}{n} = \bar{G}$$

Where: I_i = *Individual Importance*
A_i = *Individual Agreement*
$\bar{G}$ = *Average Gap*
n = *Sample Size*

(note: excluding don't know / not sure responses)

The average gap represents the difference between importance and agreement ratings for individual responses. A positive gap suggests that the individuals experience of the service is greater than expectation (e.g. importance is less than agreement). A negative gap indicates that the individual's experience is less than expectation.

For example, if the individual rated a feature moderately high (1) in importance but very high (0) in agreement, a positive gap, and hence a positive evaluation of the service feature would be indicated. On the other hand if the individual rated a feature very high in importance (0) and rated the same feature only high (1) in agreement, then the gap would be - 1. This indicates a negative customer evaluation of the service feature.

RESULTS OF GAP ANALYSIS

The results of the gap analysis are provided in Appendix 4. The size of the average gaps ranged from 0.6 in relation to acceptable patient waiting time, to -2.57 in relation to customer consultation when planning services. Ten out of forty-four features of service quality have average gaps in excess of -1.0. Five out of the forty-four features have average gaps between -0.30, and zero.

Statements which are rated high in importance are of concern to managers. In addition, those statements that received a negative gap evaluation are of concern for service managers. Negative evaluations indicate that there is potential for customer dissatisfaction since the customer's perception (experience) of the service feature is less than their expectation.

The average overall customer rating for importance is 1.9 and for perception is 2.5, and the average gap was -.72. Four features of service quality received high importance ratings (1.3 to 1.6) and had large gaps (.70 to 1.38) between customer expectations of the feature and perceptions of the service performance . These features are listed in Table 7.16.

Table 7.16

Statements with High Importance Ratings and High Gaps

Statement	Importance	Gap
Radiologists promptly advise referring medical— practitioners when urgent follow-up is necessary	1.3	-.87
u/s diagnoses are consistently accurate	1.5	-1.32
There is close collaboration between radiologists and hospital-based medical practitioners	1.5	-.70
u/s staff have all relevant patient information to carry out procedures with patients	1.6	-1.38
(note: customer responses listed in descending order of importance)		

THE SPREAD

The spread for each feature of service quality is estimated as the square of the sum of the individual gaps divided by the frequency of responses. The calculation for the Spread is presented in Table 7.17.

Table 7.17 Calculation of the Spread

$$\sum \frac{(A_i - I_i)^2}{n}$$

(note: excluding don't know / not sure responses)

Table 7.18 represents four features of the service which received negative customer evaluations and also had high spreads (discrepancy) amongst respondents. For example, the statement on the extent of consultation with customers when planning services had a wide variance (.51) in response ratings. The large spread indicates that there is a wide difference in opinion amongst customers on their perceptions of quality of the service feature.

Table 7.18 Statements with gap in excess of 1.00 and spread greater than .30. Customer responses listed in descending order.

STATEMENT	GAP	SPREAD	IMPORTANCE
Institutional managers regularly consult with referring medical practitioners when planning u/s services	-2.57	.51	2.4
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	-1.79	.32	2.0
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	-1.54	.41	2.1
Ethical considerations are addressed effectively when developing and planning u/s services	-1.25	.42	2.0

Overall the variance in responses (spread) range from .10 on statements referring to **friendly and courteous staff** and **patients rarely becoming upset from examinations** to .57 in relation to the statement that **medical practitioners need further education to improve patient preparation.** The high spread for the statement **patients rarely become upset** indicates greater discrepancy in customer opinion.

7.5 QUALITATIVE FEEDBACK FROM RESPONDENTS

In the pilot study carried out with medical practitioners, it was found that few medical practitioners were willing to provide written comments on the survey form. Discussions with respondents revealed several concerns. One common point of discussion related to the fact that there are increased numbers of referrals of patients to private ultrasound services as a result of the change in reimbursement for private ultrasound. The previous system was one in which government covered the costs of public rather than private antenatal (obstetric) ultrasound. The change allows for both the public and the private sector to be reimbursed by government for antenatal ultrasound. Community practitioners indicate that because of this change in the reimbursement, obstetric referrals are primarily being referred to the private rather than public ultrasound service.

The discussions carried out during the pilot survey revealed several reasons why community practitioners are changing their referral patterns from public to private obstetric ultrasound services. Reasons include convenience of parking, friendliness of staff, ease of access to and personal approach from radiologist, and promptness of reporting. During discussions with community based medical practitioners, it was found that the private service is also considered more flexible and accommodating to both patients and medical practitioners. Customers and ultrasound providers gave a number of comments about ways in which the public service could be improved.

Clinical Assurance

Medical practitioners perceive that more formal systems are needed for reviewing films and quicker access for urgent appointments are needed.

Customer Responsiveness

The following issues were identified as areas for improvement: communication systems to decrease reporting time; availability of urgent reports and availability of diagnostic outcomes from cardiac ultrasound.

Customer Orientation Regarding Service Development

Medical practitioners state they require expansion of ultrasound service offerings such as additional interventional services.

Patient Responsiveness

Medical practitioners identified several issues of concern in relation to patient responsiveness. They indicate that patient information may be improved in relation to the accuracy of pregnancy testing and availability of results of examination. Other areas perceived necessary for improvements include the friendliness and helpfulness of staff and the flexibility in scheduling appointments (e.g. making appointments over the telephone and making appointments available outside school hours). Others recommend improved parking facilities for outpatients; better access and convenience for individuals out-of-town; and improved amenities for children.

7.6 OVERALL FINDINGS

In general, the findings demonstrate several areas where there are differences between the groups of customer and provider respondents. Many features were identified in which customers perceive the service is performing to their expectations. Other features were identified where the service is performing less than expectations. The latter are areas for concern in that there is a strong indication of customer dissatisfaction with performance in relation to these service features. The findings also indicate that there are some differences in perceptions between the provider and the customer group. A major finding from this study is that many of the customers lacked information or opinions on a significant

number of issues which they judge as important, however the providers were consistently able to state their opinion on the issues they rated as important.

Utilising agreement rating scales, the service features were evaluated in relation to perceptions of service quality. An important finding was that a large percentage of customers who have high expectations and who consider the service features relevant, indicate they don't know how they perceive the service quality.

The verbal discussions and written comments from both customers and providers offered insight in relation to specific aspects of the service that may be improved. Customers appear to have higher expectations in relation to the service quality dimensions involving clinical assurance, patient responsiveness and customer responsiveness. Customers have somewhat lower expectations surrounding customer orientation regarding service development and management ability.

All the providers feel that there is good collaboration and communication between staff and customers. Providers gave higher agreement ratings of hospital rather than community practitioner collaboration. Providers generally agree that staff collaborate with customers when planning or developing ultrasound services.

An area of concern for both users and providers is that **medical practitioners need increased education from staff on common investigations to ensure appropriate use of the service** and that **more information is needed on staff role in advising on selection of procedure.** In general, providers who feel the features are applicable, more consistently state that they agree with the majority of the statements as compared with the customer group.

The results indicate that clinical and patient related areas and customer responsiveness issues may be more important to medical practitioners on the whole, than are managerial issues and issues relating to the customer orientation

of the service. Table 7.19 presents the most important statements based on a comparison of importance ratings, as perceived from the customer perspective and comparative rating by the provider group.

Table 7.19 Statements of Highest Importance - Customer Perspective

Statement	Importance Rating Customer	Importance Rating Provider
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary	1.3	1.1
Patient u/s appointments are available within an acceptable period of time	1.4	1.7
u/s staff always ensure patient privacy and confidentiality	1.5	1.0
u/s staff keep up-to-date with latest relevant technologies	1.5	1.2
There is close collaboration between radiologists and hospital-based medical practitioners	1.5	1.3
u/s diagnoses are consistently accurate	1.5	1.4
there is appropriate upgrading of u/s technical equipment in view of cost constraints	1.6	1.2
Outcomes of u/s diagnosis are appropriately reviewed	1.6	1.5
u/s staff are well trained in using equipment	1.6	1.0
radiologist are available to competently carry out all specialised u/s procedures	1.6	1.3
Advice regarding u/s is readily available when requested by referring medical practitioners	1.6	1.3
u/s reports accurately address the clinical questions	1.6	1.3
u/s staff have all relevant patient information to carry out procedures with patients	1.6	1.3

The results of the analysis of the survey findings indicates that on the whole, features considered important to customers are considered equally important by providers of the service. Some differences were identified in relation to ratings of importance. For example **availability of patient appointments** was given a higher importance rating by customers than providers of the service. This issue appears second in importance by customers however this feature did not rate in the top seven issues as perceived by providers. The findings indicate that close **collaboration between ultrasound staff and hospital-based medical practitioners,** and issues relating to **clinical assurance** are also considered more important to customers compared to providers.

It may be important for managers to compare provider and customer perceptions about service features to ensure that resources are being deployed appropriately. For example, if customers do not feel features are important and providers rate these of high importance, there is a potential that resources may be wasted. Furthermore if customers rate features of high importance and providers do not perceive these to be important there is a strong likelihood of customer dissatisfaction with the service quality in relation to the feature. Table 7.20 presents those statements considered most important by the group of providers. Provider's overall rating scores were higher than customer scores. It is important for managers of ultrasound to take note of the features that have been identified by this study as important to the customer to ensure that resources are being allocated appropriately. Appendix 8 presents data on customer and provider mean importance ratings based on individual statements.

Table 7.20 Statements of High Importance - Provider Perspective

Statement	Importance Rating Provider	Importance Rating Customer
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	1.0	2.0
There is adequate monitoring of radiologists	1.0	1.8
u/s staff are well trained in using equipment	1.0	1.6
u/s staff always ensure patient privacy and confidentiality	1.0	1.5
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary	1.1	1.3
There is appropriate upgrading of u/s technical equipment in view of cost constraints	1.1	1.6
u/s staff keep up-to-date with latest relevant technologies	1.2	1.5

7.7 SUMMARY

Respondents provided useful information on ways to improve the ultrasound service and areas for future service development. This study also offers insight into methods for data collection amongst respondents in the same profession. There is evidence that managers may gain a great deal of information on

customer perceptions through informal methods of data collection such as face-to-face or telephone conversations. In carrying out such a survey, it became evident that both quantitative and qualitative methods of investigation are necessary.

A number of features of the service quality were identified where enhancements may be necessary. Collaboration with medical practitioners, improved communications about issues of clinical assurance and training targeting needs of referring medical practitioners are some of the areas where customer satisfaction may be improved. Many of the features, considered by respondents to be important, are under the direct control of the radiologist or technician (e.g. diagnostic outcomes, reporting usefulness). Other features, which require action from both specialists and non-specialists (report availability, scheduling), were also identified. When addressing the service quality features identified as important by the respondents, the involvement of all the staff in the service may be necessary.

There were substantial gaps in perceptions of service quality where management strategies may be needed to more fully 'satisfy' the customers of the service. The largest gaps exist in relation to clinical assurance, patient responsiveness and customer orientation regarding service development. Considering that two of these three service dimensions were very important to customers, management strategies such as the development of service guidelines; customer education; and customer opinion research may provide considerable opportunities for improvement.

The findings from the literature and from customer feedback, provided information in respect of the service elements which are judged by customers to be important. These elements were grouped into five areas including management ability, customer orientation relating to service development; customer responsiveness; clinical assurance and patient responsiveness. Evaluations of these dimensions by customers and providers and differences in perceptions between the two groups contribute much to understanding the areas

for service quality improvement. As in the study by Brown and Swartz (1989), the findings suggest that to establish areas for improving service quality and service enhancement, health service managers can gain much from the evaluations of not only customer satisfaction, but the comparative evaluations of providers and customers. The findings suggest that to date, the service providers have not fully involved the key customers, (community and hospital based medical practitioners) in the service development process. These findings are important in light of the current trends facing service management, the health industry and public hospital ultrasound services.

CHAPTER 8
DISCUSSION AND CONCLUSION

8.1 INTRODUCTION

The findings from the research suggest several key implications for management. Principal considerations will be outlined in the following discussion. Following this, the discussion will focus on a review of health service characteristics which influence the likely utilisation of the service quality approach. The review looks at strengths and weaknesses of the health sector in light of the organisational and environmental context of the public health service. The discussion concludes with challenges for further research to be carried out on service quality in the public health sector.

8.2 KEY ISSUES FOR MANAGEMENT

Without community or hospital referrals the ultrasound service would not exist. The purpose of the ultrasound service is to facilitate the work of community and hospital medical practitioners to aid in the diagnosis and treatment of health related problems. Therefore the staff in ultrasound have as a primary task, understanding the requirements of the customer and maintaining a positive provider-customer exchange relationship.

Understanding the nature of the service is important. The process of delivering the service is not complete until the result of the diagnostic outcome is reported to the medical practitioner. Sometimes the service offered is purely technical in its nature and other times the service is consultative in its nature where service providers must work with the medical practitioner's perspectives, assumptions and expertise.

A major assumption in carrying out this study is that performance or success of the service will ultimately depend on the ability of the service providers to satisfy

essential customers. This study focused on the identification and examination of gaps between expectations and experience of forty-four features of ultrasound service quality. The survey was designed to identify features of the service considered important by customers and to identify the perceptions of the respondents in relation to the service performance based on each feature. In addition, the survey was designed to provide a foundation from which service quality may be evaluated.

The results of the study indicate that features which were examined are considered important to the customer, therefore these features may be useful in conducting future studies of service quality. The study's findings suggest that gaps may exist between customers expectations (importance ratings) and experience (agreement ratings) of the service. The findings also suggest dimensions of the service where the gaps between expectations and experience are greater than other service areas.

A number of areas were identified in which there were similar ratings between customer perceptions and customer expectations. This suggests that customer expectations were met indicating positive evaluations of the service features. The research findings also indicate several areas in which negative evaluations were identified. Negative evaluations of service features are of concern to management of the service because the level of negative evaluation for each feature of the service indicates some degree of dissatisfaction.

8.3 AREAS FOR MANAGEMENT CONCERN

Based on the study's findings, there is a need for further clarification as to how customers interpret the survey statements so that management strategies can be developed to improve customer evaluations. The survey findings indicate a number of areas where there is a potential for customer dissatisfaction. Management should give priority attention to such areas.

Collecting objective data on customer opinion

One potential area of dissatisfaction involves the extent of radiologist's collaboration with medical practitioners. Management tasks include further research to ascertain what service factors contribute to 'good' collaboration and then review ways in which radiologists can improve their collaboration with medical practitioners. Attention may be given to open communication, encouragement of feedback, and customer surveys for use in service development.

Another feature which may be of concern to management involves customer perceptions of the accuracy of diagnosis. Further research is needed to identify how customers interpret whether or not the diagnosis is accurate. Diagnostic accuracy may relate to factors such as how the diagnostic information is used by customers and what change in therapeutic intervention occurs as a result of the diagnostic information. Since customers view this feature as important, managers may need to reassess how service providers ensure accuracy of diagnosis and communicate this information to key customers.

According to the findings on customer perceptions, further attention is also needed to ensure staff have relevant patient information for patient examinations. Patient information is provided by the medical practitioners. Service providers are responsible for communicating their requirements in relation to patient information and referral guidelines, as well as developing systems to ensure they have necessary patient information prior to ultrasound examination.

Further research is necessary to ascertain why customers do not agree that relevant patient information is available. Communications may need to focus on the exchange of information between providers and customers to improve customer perceptions about this feature. Service specifications regarding patient diagnostic information may need to be reviewed and effectively communicated to customers.

Collecting Data on Staff Opinion

Those responsible for managing the ultrasound service may make assumptions about how the customers evaluate service quality and what features of the service are important to the customer. Service managers may base plans for service development on assumptions without ever collecting data about customer views of the service. To better ensure effective use of resources, decisions regarding service development must be based on information on customer requirements and perceptions of the service based on these requirements. It is important for service providers and managers to base decisions on data which has been collected in an objective fashion rather than relying on providers' intuition or unverified assumption.

Using Information for Resource Management

The findings from this study suggest that providers and customers differ in their evaluation of service quality. It is important that managers understand features that are important to both parties and evaluate the level of satisfaction of the service exchange. Requirements of individual customers and providers may vary. It is necessary to evaluate levels of satisfaction on an ongoing basis to ensure that the service is being monitored for any changes in perception and potential dissatisfaction.

Propensity to Over Promise

Comments from respondents suggest that managers may wish to address issues involving communications on what customers can expect from the service. It appears that providers have sometimes overpromised to either patients attending ultrasound or the medical practitioner in regard to the amount of time it will take before the ultrasound report becomes available. Although ultrasound staff may not be responsible for the delay in the report availability, customers are disappointed when the report is not received 'on time.'

Educating Customers about the Service

Radiologists can enhance their relationship with the customer through assisting customers to become more knowledgable about the service offering. A recurring issue identified from the customer comments involves a lack of understanding of the rationale for ultrasound policies or procedures. Customer identified examples include changes in diagnostic procedures, lack of specific diagnostic services, lack of education and/or guidelines on common investigations and lack of knowledge of service offerings and service development.

Many customers indicate they do not know how radiologists go about monitoring diagnostic outcomes. Few medical practitioners indicate having had inservice training on ultrasound procedures, therefore communications about ways that service providers monitor technical quality may be important. Knowledgeable customers are likely to be more assured about the clinical ability of the radiologists. Informed customers are also likely to be more responsive in asking questions, providing necessary information, providing feedback and, as an end result, will be more likely to achieve better therapeutic treatment for the patient.

Another characteristic of the service makes it important for staff to maintain awareness of the needs of the medical practitioner. A concern in ultrasound is the lack of attention to the communication requirements of key customers. Communication requirements between medical practitioners differ. Without clear understanding of requirements of individual customers, the likelihood of customer dissatisfaction increases.

For example, service providers come into direct contact with patients and only sometimes have direct contact with medical practitioners. The lack of contact may result in the situation that communications are prompt and satisfactory from the patient point of view but not from the perspective of the medical practitioner. To ensure customer needs for information are met, it may be necessary for the content and process of staff-customer communications to be controlled and

monitored throughout the service process. Customer expectations regarding communication before, during and after the diagnostic examination may need to be given considerable attention.

Summary of Issues

The findings from this study indicate that in attempting to identify customer expectations and perceptions of service quality, a variety of approaches including both quantitative and qualitative research methods are necessary. This is particularly important when the group has similar training backgrounds and when the customers are in a dependency relationship with the service providers. This situation may occur when there are few service options from which customers may choose.

Providers may wish to undertake several actions to enhance the service quality including educating customers and improving customer communications about the service offering. In addition, obtaining customer feedback about areas in which the service may be improved may be useful to better understand customer requirements. Understanding these requirements and offering realistic projections about what customers can expect from the service offering was found to be important in the research carried out in the operational setting of the ultrasound service.

8.4 SERVICE CHARACTERISTICS FACILITATING SERVICE QUALITY

Increasing attention has been given to the assessment and monitoring of service quality and the potential usefulness of such information for decisions on the overall strategic position of the service firm. Drucker argues that the most important cause of business failure was an inability to articulate the basic concepts, values, policies, and beliefs that give direction to the business, its

managers and its staff (Drucker, 1974). The key to effective management lies in the ability of managers to identify and communicate strategic direction for the organisation and staff.

Service quality improvement cannot take place within a vacuum. It requires shared definitions and understanding of basic concepts. If quality improvement is a goal of the health service, then the communication of management's basic concepts, values, policies and beliefs is necessary.

In assessing the likelihood that similar studies of service quality will be useful in the public health sector, one must first evaluate the feasibility of such a study in the organisational and environmental context. The benefits from focusing on service quality such as improved efficiency, effectiveness or economy, must be greater than the administrative costs of conducting the study. Further research and cost/benefit analysis needs to be conducted to ascertain the relationship between improvements in service quality and the goals or objectives of the public health service.

Building on the findings from the literature on trends in health services, factors will be reviewed which may contribute to the extent to which the service quality approach would be utilised in the public health service environment. The health sector environment has a number of features which facilitate the likely adoption of new approaches to defining and improving quality and these characteristics will be highlighted. The focus will then turn to addressing issues that may better ensure that further studies of service quality are applied within operational settings.

ENVIRONMENTAL FACTORS

Environmental changes have resulted in new methods of delivering health services. These changes create pressures to which health service managers must effectively respond. Simyar et al (1988) suggests that escalating health care costs are a

reality. Simyar suggests that health service organisations are finding it difficult to maintain their present level of services because labour and supply costs in health services have been increasing at a rate above that of inflation.

Other factors to which managers must respond include the following: complex, constantly changing and only partly quantifiable goals; demonstrated inefficiencies; increased complexity in the health industry; lack of customer input; uncertain and uncontrollable future; and continued demands for health services under conditions of resource constraints (Gibbs 1988; Simyar et al 1988). To better respond to these environmental pressures, there is a need for the development and application of new quality improvement theories and methods.

New Pressures to Evaluate Performance

The adoption of a strategic vision which gives recognition to the need for a customer focus and service quality is a relatively new and underutilised concept in the public health sector. One reason for this, suggested by Koska (1990), is that there is a common understanding amongst service providers, managers and many individuals that in health services only two things matter: the level of quality of clinical care the patient receives and how well the hospital runs. An emphasis in evaluating how well the hospital runs may be on whether or not the hospital is in financial deficit. Data which represents whether customers are satisfied with the service offering has only recently been considered important in evaluating the performance of the hospital.

Methods for Demonstrating Improvements in Service Quality

Health service providers are holding expanded responsibilities to ensure services are meeting the needs and expectations of essential customers, thus changing the way services are provided (Lanning 1990). Service industries which have collected and managed information on customer perceptions of the service, have found

improvements in product and service quality, productivity, and efficiency (Beecroft and Jordon 1990). Beecroft and Jordon suggest that service quality improvements can be achieved in most if not all aspects of the organisation. These examples of achievements from service industries outside the health sector are relevant in light of current pressures faced by health service managers. In addressing the relevancy of service quality approaches in the public health sector, it may be helpful to look at the factors that may hinder or assist in the ability to apply these concepts in the operational setting.

Perceived Benefits

Developing a health service environment which recognises the importance of service quality requires an understanding of benefits at the customer, provider and funder or payer level. New approaches in management will only be accepted if they are trialed or applied within the operational setting and perceived as relevant by service providers. This depends on commitment of individuals to education, implementing service quality strategies and evaluating the strengths and weaknesses of the strategies in light of external requirements and internal needs of the organisation.

Pressure to Change

Changes in government policy impact on the future role the New Zealand public health service. One likely change is the way health services are organised and funded (Payne, 1991). Payne suggests that alternative approaches to regulating and managing public health services are being considered. Encouragement of competitive tendering, contracting out of services, and encouragement of increased involvement of the private health industry are likely to be the outcome of changes in government policy.

Decentralisation of management with the development of independent management systems will result in several changes. The introduction of

alternative management systems and increased competition, has, as a likely outcome, the situation where the public sector will be more responsible for organising services and managing contracts than delivering services and managing the workforce. One trend, already occurring is the development of service contracts between funders and independent providers of public services.

Changed management systems create an environment which is characterised by heightened scrutiny of service performance by external funders or purchasers. The evaluation of specified performance measures is emphasised in service contracts between funders and providers of services. As a result of contract relationships between funders and providers, managers will need to demonstrate measures of performance to customers including those who consume and benefit from the service and those who fund or purchase the service. For example, demands will be increasingly be imposed on managers to provide information that services are satisfactory to beneficiaries or consumers as well as provide measures of performance in relation to efficiency and quality to those who fund or pay for the service.

Contracting of health services creates new demands for management. Those responsible for purchasing health services will need to focus on developing, managing and monitoring service contracts, understanding service requirements, and developing systems to manage the consequences of good or bad performance through contract design and performance payments. In managing contracts, the requirements of the service purchaser will need to be identified and specified in terms of quantity and quality of service. Individuals, companies or the public sector workforce who may win the tender or contract, will be faced with new responsibilities, including the management of service operations in a cost-conscious fashion.

Performance Indicators

Performance specifications and measures are likely to be necessary for determining both the quantity and quality of service outputs. This information may be used for external reporting purposes or for use in internal management. Information on performance is required to satisfy external requirements of purchasers or funders of health services including auditors, select committees and review bodies. Information on performance is required not only for external reporting purposes, but internal management of day-to-day operations.

Many commonly used performance measures emphasize quantitative information such as cash flow, unit costs, throughput and quantity of activity. This information is obtained through basic accounting, financial and management information systems. Performance may be also be measured in terms of whether the service is meeting specified goals or objectives, and in relation to areas where improvements are needed. Managers will require systems for monitoring and ensuring that service obligations toward the customers are being fulfilled. In addition, estimates of value for service output will be necessary to ensure optimal quality levels of service are being developed and delivered based on available resources and cost constraints.

Recognition is given to the importance of service quality in competitive environments, however it is difficult to develop commonly shared definitions of service quality. In addition, management information systems representing objective measures of service quality such as customer satisfaction levels and measures of process improvement are also in developmental stages. Although a consensus of approach in the health service has not yet been reached, changes in the structure and funding of health services result in the likelihood that managers will need to incorporate new methods to understand, measure and improve service quality features as a way of improving service performance.

ORGANISATIONAL FACTORS

Activities carried out in the health services focusing on quality assurance have largely been driven by health care professionals. A greater emphasis on financial controls means that costs of investments in quality assurance activities are being evaluated in relation to measurable benefits. Previous approaches to health care quality, which focus on documenting and monitoring health care standards, retrospective reviews of clinical practice and monitoring inputs to health services, are being evaluated in relation to organisational goals and objectives of governing boards and managers. Quality assurance activities are being managed more closely to ensure achievement of specific measurable results.

There is a greater awareness amongst health service providers that it is difficult to 'assure' quality. Traditional approaches to quality assurance have focused on defining and measuring quality based on clinical features and medical performance. Although traditional approaches have many benefits, there is increased recognition of the narrow focus of activities such as the following: peer review; monitoring inputs to production and standards; quality control audits (e.g. accreditation); and measuring medical practitioner performance and treatment outcomes (e.g. post treatment health status). Traditional approaches are being reassessed in relation to whether value for money has been obtained from the investment. Enhanced understanding of service quality dimensions illuminate some of the limitations of professional approaches. Investments in quality must be considered essential to the strategic requirements of the health service. Current developments recognise the need for new approaches to addressing and measuring quality (French 1981; Lanning 1990).

Commitment to Quality Assurance and Research Methods

The health service industry has a number of characteristics which contribute to the likelihood that activities focusing on service quality enhancements will be successfully adopted. Awareness of the importance of quality and the need to

monitor and measure quality is high amongst health professionals. The orientation to the patient, clinical interest in research, and familiarity with clinical aspects of quality enhances the ability to integrate service quality improvement activities in practice settings.

Health professionals are trained to collect data and to utilise basic research methods. The work of the health professional concentrates on observation and diagnosis of problems, making hypothesis, recommending treatments and monitoring outcomes of treatments. This level of knowledge and training in research methodology is useful when considering the application of data collection methods to identify areas where health services may be improved.

Estimating Value from Investing in Quality

Health service providers generally recognise that cost constraints, financial pressures and competition for private and public funding impact on the future direction of the way health services are managed. Resources deployed in assessing and measuring quality levels must be justified in terms of demonstrating the extent of customer responsiveness and shaping the strategic direction of the service.

Management Based on Data

There is an awareness amongst many health providers of the importance of evaluating the level of satisfaction of the many customers of health service including patients. Researchers are recognising the importance of identifying definitions of quality being used, and making explicit the desired outcome of efforts invested in improving the clinical or service quality. Research has demonstrated the importance of carrying out investigations on customer satisfaction in a way which will be found useful by health service providers. Additionally, there is a new awareness that outcomes of research need to be linked to information requirements of managers.

8.5 POTENTIAL BARRIERS IN MANAGING SERVICE STRATEGIES

The previous section highlighted a number of characteristics of the health industry which facilitate the utilisation of service quality strategies. It is important for health service managers to recognise potential barriers to introducing strategies aimed at enhancing service quality. This section provides an overview of some of these barriers.

The relevancy of this study of service quality in hospital ultrasound services has been explored. The application of studies of customer satisfaction in the New Zealand public health sector may have limited usefulness at the present time. It is suggested that although a study such as this is relevant, there may be limited opportunities for such a study to be carried out or its findings to be integrated in the service strategy in the public health sector.

It is important when considering new approaches, to identify potential barriers and ways they can be addressed. A number of barriers impact on the feasibility of implementing further studies of service quality in the health sector.

ENVIRONMENTAL FACTORS

Decisions to focus on service quality are ultimately dependent on individual perceptions and the subjective values that reinforce them. These perceptions act within a context of immediate organisational and environmental circumstances. When considering possible means to heighten awareness of the importance of service quality, it is necessary to consider factors within the internal and external environment which shape individual perceptions and values.

In private or commercial industries, there are market conditions which offer incentives for maintaining a service quality orientation. If customers are unhappy with critical features of the service, the likelihood for dissatisfaction increases. If a customer is dissatisfied with a service, they may look to alternative sources of

supply. The following discussion will highlight some of the reasons that to date, there have been limited efforts to incorporate health service management strategies aimed at identifying needs and satisfying the customers of the health service.

Lack of Quality Performance Measures

There may exist a lack of pressure from either funding bodies or management to develop a consensus of approach in defining and measuring service quality. Service providers may not be formally rewarded for attention to service quality. In fact, measures of service performance may not be required or evaluated at all. In addition, performance indicators which are used to evaluate the service, may lack effective measures of quality. For example, funding is granted to Area Health Boards through contracts with the Minister of Health. These contracts may not stipulate the requirement for Boards to provide objective or comparative data on service quality, consequently service quality may not be considered a priority amongst service managers.

Since competition is limited, there are few incentives for activities focusing on improving service quality to be undertaken. There are few demands imposed by the government and other funding bodies, for health service providers to demonstrate not only efficiency and effectiveness of service but the quality of the service. In addition to date there are no requirements by Government for providers to evaluate customer perceptions of the service thus, the service could survive even if there was no attention given to service quality. There are few incentives for local providers to ensure that customers are satisfied with the services received.

Existence of Dependency Relationships

Dependency relationships exist between the customer and the service provider. Professional autonomy and specialist status of the service provider creates an element of dependency within the provider-customer relationship. For example in ultrasound, the professional autonomy of the radiologist and ultrasound technician creates a dependency relationship where the medical practitioner needs the service, but the provider decides how the service will be offered. Differences in knowledge levels or experience with ultrasound also contribute to this dependency relationship.

Customers have differing levels of knowledge of the technical aspects of ultrasound. Providers may assume that since they know more about the technical service offering, they are in a better position than their customers to judge how services should be developed. Because of the specialised knowledge of the service provider, the customer may not have the knowledge or expertise to judge the clinical aspect of the diagnostic outcome.

This dependency may render the customer unwilling to criticise the service. Differences in knowledge levels between providers and customers also creates an environment where providers may disregard client opinions as being important. Providers have more knowledge, therefore they may assume that they know what the customer really needs.

Efforts to improve service quality requires the desire by management to identify the needs, wants, preferences and expectations of customers in order to target actual and potential customer demands. This implies that a goal of the organisation is to meet the demands in a specific way and at a price so as to produce a mutually beneficial exchange with the customer.

Estimating Value for Money

In the present environment, New Zealand lacks a strong competitive market for health services. In market driven economies, competition may function as a major incentive for service industries to focus on customer satisfaction and service quality in pursuit of the goal of retaining existing and attracting new customers. In competitive environments consumers have choices between service offerings. Competition creates opportunities for consumers to influence the supply and level of the service offering through consumer spending power. The public health system offers few opportunities or incentives for individual customers to influence or challenge current practices of service provision.

In a competitive market economy, customers pay a specified price for a given service package. Based on the price paid for a given service, managers have information to compare the costs to produce the service and the costs to deliver the service. The price which is paid by individual customers for a service is an indicator of the amount managers may spend in providing the service.

The value of the service is determined by the quality of the service, and the costs at which this level of quality is attained. It is therefore imperative that customer values and perspectives are recognised and made explicit if the objective of value for money in providing health services is to be effectively addressed. In competitive economies, DeSouza (1989, p 21) states that quality can be viewed as follows:

- Quality is the performance as perceived by the customer,
- It is measured relative to the competition; and
- It is balanced against price to provide "value."

A major component of the decision-making process regarding costs of health services is based on determining the value which is obtained for the investment. In competitive environments, these value judgements are based on the intersection

between perceptions of cost and quality. With no information about quality or costs, it is difficult to ascertain whether value for money has been obtained from the investment in public health services.

Funding bodies and management may ascertain whether they are receiving value for money invested in health service through focusing on service quality. Press states that customer satisfaction is considered measurable, is integral to the definition of quality, and can be used to quantify effectiveness. Customer satisfaction plays an important role in value assessments (Press et al, 1991). To date, little emphasis has been placed in measuring or comparing levels of customer satisfaction in the New Zealand public health sector.

In New Zealand, public hospitals are funded by the government to supply health services. The government plays a key role in deciding on the distribution of public funding for health services. For example, a large portion of the funding for public services is based on population-based funding formulas. Governing boards and managers decide how the public funding will be distributed. Due to the central allocation of funding for regional health services, individuals (for example patients or general practitioners) do not pay directly for the public health services. Therefore few opportunities are available for customers to influence the way services are offered.

Imbalance Between Supply and Demand

Demand for services by the New Zealand public (willingness and ability of individual customers to pay) does not directly influence the supply of health services. Individual practitioners have no direct input into the payment system for public health services and therefore can use little means (e.g. financial payment) to influence what services are provided. For example, the extent to which medical practitioners can exert pressure on service providers by going elsewhere or not using the service is limited. The customer has had little choice but to

accept what service is offered. In the public health system, the lack of even modified commercial competition limits incentives for service managers to focus on improving service quality

Lack of Incentives

The need for Area Health Boards to produce strategic and operational business plans indicates that performance requirements are becoming necessary for central government funding allocation. In the public sector performance is increasingly being evaluated based on economic, efficiency, and effectiveness measures. Performance may also be measured in relation to service quality requirements. Problems in identifying customer expectations and then meeting the expectations may stem from a lack of financial and performance incentives or regulatory requirements to focus on service quality.

In the current system, it is therefore difficult to identify direct benefits from expending valuable and scarce health service resources to assess or improve service quality. To date, service quality has not been accepted as a critical performance indicator of the service. As a result, there are few accountability systems in place which hold health service decision-makers responsible for levels of service quality.

Another problem, common in the public sector, is that managers frequently lack control over determining priorities for service delivery or how resources are allocated. The public health service operates within a structure under statutory and financial constraints of Ministry of Health and the Area Heath Board. Policy directives which are political in nature may be in direct opposition with managerial concerns in clinical areas. Priorities which are established outside the control or influence of service managers may be in direct conflict with the views of service providers and managers. In the present environment there is little likelihood of satisfying customer expectations since there are few incentives or opportunities for health service managers to seek customer opinions on service development.

An imbalance between supply and demand in the public health sector influences the level of attention given to service quality. Current management practices are aimed at containing demand rather than meeting demand. In the public health system, manager's goal is not to generate demands for health services but to ration supply, through limiting what and how health services are provided. In many cases, the development of cost centres make managers accountable for keeping budgets under control, rather than responding to the 'market' for services (Metcalfe and Richards 1987).

Those responsible for the operational management of the services are frequently in positions where they can make little change in the long term direction of the organisation which they may feel is required. In relation to health, it is difficult to reach agreement or consensus on how resources should be allocated and where priorities should lie. For example, at the individual level effectiveness of services may be considered most important, however for the taxpayer, efficiency in services may be most important. Since demands for health services will always outweigh available supply, efficiency is recognised as a primary objective in the public sector.

Control over resources is frequently out of the hands of the direct managers and providers. Managers of the service may be in a good position to know what the desires of their customers are, but are not in a position to create unrealistic expectations because it is unlikely they will be able to meet these demands. Without control over resources or management strategy, direct service managers have little accountability for failures to ensure service quality. In addition, rigid hierarchies and long existing rules may also make it difficult for the service providers to be responsive to customer's demands.

The views of decision-makers and service providers about the goals of the service and perceptions of their roles in relation to service goals, influences their belief of whether service quality is an important aspect of the service. There will continue to be a lack of attention to service quality without a recognition of its

importance amongst people responsible for resource decision making including funding bodies (government), governing boards, management and service providers.

ORGANISATIONAL FACTORS

For any management practice to be introduced and applied within an organisational setting, there is a requirement that the concept is acceptable and seen as important to all those who may contribute to its implementation. The concept of service quality must be considered an important construct and priority in the way the service is provided. A lack of awareness of service quality, understanding of individual responsibility in relation to service quality, conflicting orientations, and lack of overall direction are some of the issues which must be addressed.

Ineffective Use of Information

Managers in the public health service may fail to use, or ineffectively use information from service quality evaluations because they perceive the results to be insignificant or with little relation to current problems. Characteristics of the New Zealand public health system, such as the government's health policy, the organisational environment of decision makers and the national and local problem situations, influence the extent to which the goal of service quality is met.

The utilisation of service quality evaluations may be limited due to the lack of staff preparation in the evaluation methods, reluctance to divert funds from the provision of services to their evaluation and inadequate resources for evaluation activities from hospital administration. In addition, if the evaluations are initiated by those removed from daily operations of the service, the information may be of limited use (Blacker and McLennan 1987).

Other reasons for the lack of attention to evaluations of service quality may include the timeliness, relevance, generality and cost of such studies (Veney and Kaluzney 1984; Smith and Cantley 1985; Cameron and Whetten 1983). The issues raised by studies of service quality must important and considered relevant by the service providers. Information gained from the studies must be timely and understandable for all those responsible for providing the service.

The major purpose of collecting information on customer expectations and experiences is to aid in making decisions such as establishing priorities and allocating resources. In making resources available to carry out studies of perceptual gaps in service quality, one must consider whether the outcome of such investment will be useful for decision making. In the public health sector, there are a variety of factors which may prevent management or service providers from focusing on service quality. The following discussion will highlight some of the factors which potentially influence the lack of a service quality focus in the public health service.

To introduce service enhancement strategies, resources are required. These resources are needed in relation to education, training and staff time. There may be impediments to diverting scarce organisational resources for the purpose of integrating service quality strategies into the goals and activities of the public health service. The health sector has unique characteristics which influence perceptions of the gains that may be made by introducing service enhancement strategies. Critical factors which will be briefly detailed in the following discussion involve the general lack of environmental and/or government pressure to adopt a customer orientation and the organisational characteristics of the health service.

Divesting Resources to Enhance Service Quality

In health there has been a medical or clinical emphasis when looking towards improving quality, rather than an overall system or service focus. Activities undertaken to address quality assurance in the health service have largely been

the result of clinical interest rather than managerial policies, guidelines or direction. Instead of service quality practices, there has been an emphasis on the development and use of health standards through accreditation programmes and measures of health status. These traditional approaches to quality assurance cost money in relation to formal reviews, research and staff time.

Because of limited resources, documenting and monitoring health service standards and traditional quality assurance practices may be carried out at the expense of efforts to enhance customer satisfaction and improve the quality of the service operations. In addition, diverting scarce resources to investigate and collect data on customer perceptions of the service is of little benefit if the information is unlikely or unable to be used by service providers or managers.

Unclear Responsibilities

Service quality problems are more often the result of system rather than individual failures. Health professionals may consider that system problems are outside their individual area of responsibility. Providers may consider that service quality is a 'business-related' concern of management and administration rather than a concern of clinicians, technicians, or those who directly provide the service. In the New Zealand public health sector there are few systems to ensure that health professionals are held responsible for either service quality or the cost outcomes of their individual decisions regarding diagnostic procedures.

Conflicting Priorities

Conflicting priorities between individuals, professional groups and departments in the health service influence the level of attention given to service quality. These conflicts impact on where and how resources are deployed. Conflicting goals may be a result of differing values and ideologies, group loyalties, lack of consensus of approach, and obstructive organisational norms. For example, investment in clinical research, clinical training of staff, expansion of facilities, or increase in

customer throughput may be considered to be higher priorities amongst management as compared with investing resources to improve service quality.

Differing orientations between clinicians and management create barriers which make it difficult to reach a consensus of approach. Task priorities of clinicians may include patient management, clinical leadership, education, expansion of services, research and technical development. On the other hand manager's role involves strategic planning, financial decision making and resource management. Clinicians may believe that the quality of care is their responsibility, however decisions regarding resource priorities and resource allocation is largely under the control of management.

In the health service it is necessary for service providers to overcome barriers between clinicians and management, professional groups and departments before service quality can be considered as a unifying strategy. Incentive systems and education may need to be implemented to convince clinicians and managers that investment of resources to improve service quality is important.

Technical Versus System Focus

Strategies to address service quality require attention of all those who are involved with the service package. Reaching consensus of approach is a difficult task since traditionally in the health services, there is professional dominance in defining health service needs and an emphasis on medical performance rather than the performance of the service as a whole. In addressing the quality of the overall service, there is a requirement to divert organisational resources including staff time, research activities and funding from clinical or direct patient care to concentrate on customers and service quality.

Increased awareness of service quality is important, particulary due to the technical focus of the provider. It is clear to see how this applies in ultrasound. Service providers in ultrasound are trained to be highly technical in their

orientation and highly focused on the task of reviewing ultrasound scans and films for the purpose of providing a diagnostic outcome. The concept of quality is synonymous with the professional practice and therapeutic mission of the ultrasound diagnostic examination. As mentioned in the earlier discussion, health service providers frequently focus on clinical quality and place little emphasis on differentiating between technical (or clinical) and service quality.

Those who provide ultrasound services have a strong orientation to delivering good technical care and their training typically focuses on working on behalf of individual patients rather than focusing on the overall health system or service. The task orientation of health service providers may prevent an overall system viewpoint. With an emphasis on individual tasks or subsystems, there may be a lack of focus on the quality of the overall service as viewed by the customer.

Within the ultrasound service there are several reasons why there may be a lack of focus on meeting customer expectations. Meeting the expectations of medical practitioners may not be considered a requirement of the job of the ultrasound staff. Service providers may consider that their work priority is the examination of patients and the production of the accurately written report rather than ensuring the referring practitioner is satisfied with the overall service. Unless service quality goals and strategies are delineated, service quality specifications may not be included in job descriptions, policies or operating guidelines.

Lack of Objective Information on Customer Opinion

In health services a common understanding of who is the customer of the service and what their requirements are may be unclear. This can be seen in the ultrasound service. There exists a complex relationship between provider, customer and the patient or beneficiary of the service which leads to confusion over identifying the primary customer and understanding their requirements. Adding to this confusion is the fact that the customers (medical practitioners) and service providers are not usually in direct contact with each other.

The personal interaction that is carried out during the ultrasound scan is between the provider and the patient. The medical practitioner has limited personal contact with service providers and they are generally removed from the day to day operations of the ultrasound service. The medical practitioner usually only receives a written report. Because of this, there are few opportunities for customer feedback and a higher potential for lack of awareness of customer expectations and perceptions of the service.

The Need for Both Standardised and Individual Approaches

The provider interacts with a large number of referring practitioners. Sometimes requests are routine, requiring a standardised approach. Frequently requests require unique approaches which demand individualised attention by service providers. Berry et al (1985) states that "treating individual customers as individuals is not automatic (p 222)." Several factors are cited which prevent a service orientation.

Service quality is dependent on individual exchanges between providers and customers of the service, therefore efforts to enhance quality in service operations requires an individualised approach. Berry suggests that repetitive tasks, greater numbers of problems to solve than available staff, and size and magnitude of operation are management concerns that impact on service quality. In addition, improper selection, training, compensation and supervision of service workers contribute to a service insensitivity (Berry et al 1985). Managers must be aware of these factors that contribute to service insensitivity when focusing on service quality.

Internal Complexities

Internal organisational influences such as conflicting values and ideologies, group loyalties, lack of consensus of approach, and obstructive organisational norms all contribute to difficulty in enhancing service quality. Internal complexities

frequently obstruct provider's ability to meet customer's expectation. Conflicts may be a result of complex communication systems, limited or imperfect information, group pressures, prior commitments, individual or professional objectives or organisational politics.

Resistance to Change

Introducing and applying new practices requires a change in current practices. Change can be difficult for both managers and staff. It is likely that managers will experience resistance to imposed changes in work practices or in approaches to looking at quality. The concept of service quality also must be considered an acceptable construct and an important priority in the way the service is provided. Managers and staff must accept that changes in current service practices are necessary and that the customer focus is relevant and an important priority.

The Need for Strategic Vision

Another factor which influences the ability of the providers to become enthusiastic about service quality is lack of managerial vision, direction, and overall uncertainty regarding the values and objectives of the service. With a change in government and as a consequence, change in government policy, the direction of the public health service, and its administration, is under review. Instilling the goal and value of a customer orientation, amidst potentially major changes in the structure and funding of public health service is difficult.

Management philosophy and hospital policies or procedures may not specify definitions or goals in relation to the organisation's ability to satisfy its customers. For example, strategies may be unclear in relation to identifying the service customer, carrying out market research, evaluating service strengths and weaknesses or positioning the service based on availability of internal resources

and external demands for services. Clinicians may lobby for expansion of available services or hours of services when strategically, services are being reduced or streamlined.

A primary barrier, perhaps the most critical barrier of all, is that when taking a quality management approach, one must acknowledge that improvement is needed, that problems occur, and that mistakes are made. Health providers traditionally are punished and reprimanded for mistakes, and mistakes are not considered acceptable in professional or clinical practice. If improvements in quality are desired then there needs to be recognition that mistakes are made. The service environment must be one that encourages individuals to acknowledge mistakes or problems and identify areas where improvements may be made.

8.6 CHANGES THAT ARE NEEDED

This study focuses on exploring the concept of service quality in a health service environment and carrying out a practical piece of research in an operational setting. The process of carrying out the practical research assists in identifying the direct service customers and identifying critical service quality attributes. These attributes are tested and checked for relevancy during a pilot study. Items are then refined and those attributes of high usefulness are tested in relation to user and provider expectations and perceptions.

The findings highlight areas in which customer expectations were met. In addition, the findings indicate areas where there is potential for customer dissatisfaction. Further research is recommended to ascertain factors in the organisation which impede the ability of providers to meet customers expectations of the service.

At the broader level of the health service, several changes may be necessary before recognition is given to service quality at the micro level of the individual service. The following section will highlight some of the changes that are

necessary within the health sector to promote adoption of service quality enhancement strategies within individual departments.

Understanding the Customer Orientation

To enhance service quality, attention must be given to the relationship between satisfaction of essential customers and the overall 'mission' or goals of the service. Service performance must be understood as it relates to customer satisfaction. In that the term 'customer' is still unfamiliar to many individuals in the public health service, the concept of evaluating service performance based on customer perceptions needs to be understood.

There are many customers of health services and each requires different approaches. Providers may have difficulty identifying customers as anyone other than patients, clients or consumers of health services. The concepts of internal and external customers and service quality must be consistently defined and the identification of essential service customers must be commonly understood.

Shared Definitions of Quality

Those who make decisions about how to allocate and how to spend healthcare resources may not share common definitions of quality. Without a common understanding, individuals won't know what they want from quality nor what information is required for assessing quality.

Decision-makers must choose amongst several options on how to focus on quality. Options to address quality in health care may include measures of health outcomes, accreditation, or the audits of standards. Before the service quality approach is commonly accepted in the health care industry, providers must understand the relevancy and potential benefits in its application.

Several changes in the management of public health services are necessary for the successful introduction of service quality approaches. The service quality approach to management emphasises customer oriented rather than provider oriented services. Customer oriented service firms are characterised by the following. Service quality is accepted as a value and recognised as an essential aspect of effective services. Meeting customer expectations is considered a shared goal of both individuals within the service and the service as a whole. Providers can identify specific individual and organisational benefits from focusing on the customer. In addition, customer's expectations and views of the service offering are considered important information for use in decision making. In the public health sector, changes may be necessary to ensure the development of organisational characteristics that display the customer orientation.

Development of Performance Incentives

There may be little understanding amongst those responsible for developing and reviewing Area Health Board contracts, of the relationship between measures of service quality and strategic goals of increased efficiency or effectiveness. These relationships need to be drawn and clearly understood by those responsible for evaluating service contracts and those responsible for delivering the service.

Systems are needed that encourage decision-makers to evaluate the services strengths and weaknesses in relation to service quality. This involves monitoring the performance of the service based on the expectations and views of essential customers. Due to cost constraints in health care it is important for health managers and clinicians to establish priorities in health service delivery and to continually evaluate whether customer requirements are being met. In addition, systems are needed to evaluate different options for clinical intervention and to compare the marginal benefits and marginal costs of each option.

8.7 CONCLUSION

This study contributed to the improved understanding of conceptual frameworks and operational implications of managing service quality. The study also provided data on what features of service quality are important from the perspective of the major customer of a public sector based ultrasound service and how the views of providers compare with those of their customers in relation to service quality. In looking at factors influencing the management of service quality in an operational setting, the study also contributed to the body of literature on health service management and marketing management. Further research is needed on the evaluation of service quality and on organisational factors which impede service quality improvement in operational settings.

Maintaining a customer orientation and improving service quality requires specific actions from providers. These tasks involve collecting data on customer needs, wants and expectations; processing and analysing this data; and translating this data into information for use in strategy formulation for improving services. These improvements are based on the assumption that customer dissatisfaction or the inability to meet customer's expectations will result in negative outcomes for the service firm.

In the pursuit of organisational objectives which are based on a service quality framework, one faces many potentially conflicting ideologies. The service quality framework presupposes that decisions will be made as a result of the need to satisfy customers. This framework is based on a rational school of thought that customers are the focal point of the organisation's existence and potentially neglects to recognise that organisations are comprised of numerous differing value systems and ideological constructs.

An elaborate literature on organisational constructs exists which recognises that models of organisations stem from abstract theories which are not clearly differentiated (Cameron 1985). Health service organisations comprise multiple

characteristics, therefore it is difficult to identify one model or conceptual framework for addressing how to improve health service quality.

Recognition must also be given to the fact that it is difficult for providers and managers of service operations to be loyal to the concept that the customer of the service should be the focus of all the service activities. In taking the service quality approach, there may be a failure to recognise other, sometimes more dominant dimensions of organisations. The values held by individuals and groups within the health service have significant impact on the way decisions are made. One cannot assume that health service decision-makers will pursue objectives based on the analysis and evaluation of options on a purely rationale basis.

Researchers must recognise that providers in the public health service may be removed from incentives or environmental pressures to be customer oriented. There may be no requirement for service providers to identify customer expectations of the service, service market mix, competitive analysis or referring patterns. In addition, there may be no requirement by government or funding bodies for the provision of objective or comparative information on the level of service quality. Therefore further work is necessary to examine the possible relationship between goals relating to customer satisfaction and service quality and goals of decision makers within the public health services.

Much has been written about the benefits for managing service quality. Frequently, decisions in relation to resource allocation in the health services are based on the views of providers with little information from customers. It is important to have customer information when making decisions regarding service development and resource expenditure in order to offset the potentially dominating influences of economic and professional values.

Benefits include better coordination and targeting of services, improved data bases for identifying service priorities and for making decisions on complex issues, improved relationships with key customers as a result of identifying their needs,

and increased likelihood that services will be fully utilised. In addition focusing on service quality may result in increased communication between staff and more comprehensively planned systems for meeting customers future needs for health services.

The study has shown the importance of focusing on improving the service quality of the firm. The mere recognition of the need to focus on service quality does not fully constitute the rationale for staff to become committed, involved and loyal to this as an operational goal. To improve service quality, managers need to communicate and demonstrate their commitment; promote teamwork and training; and provide recognition and incentives for staff undertaking service improvement efforts. In addition, managers need to be held accountable for their efforts to improve service quality.

As James (1989) states:

> "The organization that is managing quality has regular answers to two questions: Are we doing the right things (strategic quality)? Are we doing things right (system quality)?"

Attention to service quality may assist managers to maintain awareness of changing expectations of their customers. Quinn (1980) suggests that strategic changes occur as a result of sub-systems within the organisation advocating change or initiating action . . . advocated change is likely to arise because of an individual's or group's perception of an increasing mismatch of strategic position and the business environment. There is a need for further research which demonstrates how attention to service quality can aide health service organisations in effectively meeting the challenges in the changing environment.

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APPENDIX 1

CUSTOMER SURVEY

Facsimile

MASSEY
UNIVERSITY

Palmerston North
New Zealand
Telephone (063) 69-099

FACULTY OF
BUSINESS STUDIES

DEPARTMENT OF
MANAGEMENT
SYSTEMS

21 August, 1990

As part of the fulfillment of research requirements for my Master's Degree in Business Studies at Massey University, I would appreciate your assistance in completing the enclosed questionnaire. The purpose of the survey is to gain your opinions on various aspects of the **Palmerston North Hospital's** ultrasound service.

You have been selected as one of the medical practitioners who refer to the ultrasound service. Information from this survey will be analysed and used to look at possible factors which contribute to the quality of the service.

The survey is divided into four parts.

- Part 1: Information about your referrals to the ultrasound service.
- Part 2: Survey statements: Level of Agreement
- Part 3: Survey statements: Level of Importance
- Part 4: Information about yourself (demographic data)

Parts 2 and 3 include statements about various aspects of the ultrasound service. Part 2 asks the extent to which you agree with the statements. These statements are repeated in Part 3 where you will be asked the level of importance you give to each statement.

After completing this questionnaire, please return it in the envelope enclosed. If you do not make referrals to the Palmerston North Hospital ultrasound service, please return the uncompleted questionnaire in the envelope enclosed.

All responses will be treated in the strictest confidence and individual responses will not be identified.

Should you have any queries, please feel free to phone me on [redacted] (home) [redacted] (work). Thank you for your assistance in completing and returning this questionnaire.

Yours sincerely,

Molly Kavet

SURVEY PART 1: INFORMATION ABOUT YOUR REFERRALS TO THE ULTRASOUND SERVICE AT PALMERSTON NORTH HOSPITAL

What percentage of your obstetric referrals go to public ultrasound services?

- percentage sent to public u/s _____%

What percentage of your non-obstetric referrals go to public ultrasound service?

- percentage sent to public u/s _____%

What percentage of your referrals are for acute or urgent diagnostic ultrasound procedures?

- acute/urgent referrals _____%

On average, how many times per month do you make referrals to the obstetric ultrasound service?

-per month ( )
-not applicable ( )

On average, how many times per month do you make referrals to non-obstetric ultrasound service?

-per month ( )
-not applicable ( )

Which ultrasound investigations do you most frequently REQUEST each month? Please tick in the bracket below.

Now, please **RANK** these from 1 to 5. Use 1 to represent the most frequently requested procedure and use 5 to represent the less frequently requested procedure.

	REQUEST	RANK
Obstetric	( )	( )
-including amniocentesis		
Gynaecology	( )	( )
Upper abdomen	( )	( )
Paediatrics	( )	( )
Cardiac	( )	( )
Interventional	( )	( )
Small Parts	( )	( )
-including thyroid, gland, eyes, breast, prostate, limbs, testes, etc.		
Others (please specify)		
_____	( )	( )
_____	( )	( )

PART 2: SURVEY QUESTIONS — **LEVEL OF AGREEMENT**

Part 2 asks you to indicate the extent to which you **AGREE** with the following statements in relation to your use of the **Palmerston North Hospital's** ultrasound facility. For each question, please tick the box which best represents your opinion.
ABBREVIATION: u/s = Ultrasound

	LEVEL OF AGREEMENT						
Access	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
Expanding hours of u/s service would not be feasible due to cost constraints.							
u/s staff always ensure patient privacy and confidentiality.							
Patient u/s appointments are available within an acceptable period of time.							
u/s staff ensure that scheduling of appointments are convenient for the patients.							
Patient waiting time for u/s examination at the u/s service is acceptable.							
The u/s service runs smoothly and efficiently.							
Location of u/s is convenient for outpatients.							
Technically Advanced							
u/s staff keep up-to-date with latest relevant technologies.							
There is appropriate upgrading of u/s technical equipment in view of cost constraints.							
Professionalism							
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures.							
u/s staff provide patients with necessary information before administering tests and procedures.							
u/s staff provide necessary information to patients following tests and procedures.							
u/s staff always anticipate needs of and intervene with anxious patients.							
u/s staff should better ensure informed consent is obtained prior to carrying out procedures.							
u/s staff-patient interaction is consistently positive.							
Patients rarely become upset as a result of the u/s procedures.							
u/s diagnoses are consistently accurate.							
Outcomes of u/s diagnosis are appropriately reviewed:							

	LEVEL OF AGREEMENT						
Training and Support	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
There is adequate monitoring of radiologists.							
u/s staff are well trained in using equipment.							
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff.							
Medical practitioners need increased education on common u/s investigations to improve patient preparation.							
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service.							
u/s staff actively encourage medical practitioners to learn more about available services.							
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations.							
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations.							
Radiologist are available to competently carry out all specialised u/s procedures.							
Reports and Communication							
Advice regarding u/s is readily available when requested by referring medical practitioners.							
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary.							
There are frequently delayed u/s diagnoses which adversly affect patient care outcomes.							
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff.							
u/s reports accurately address the clinical questions.							
Staff Relations							
There is close collaboration between radiologists and hospital-based medical practitioners.							
There is close collaboration between radiologists and community-based practitioners.							
u/s staff have all relevant patient information to carry out procedures with patients.							
u/s staff encourage and respond to feedback from referring physicians to improve the service.							

	LEVEL OF AGREEMENT						
Orientation towards needs of Medical Practitioners	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them.							
u/s staff are friendly and courteous.							
Planning Ultrasound Services							
Expansion of u/s services have been appropriate.							
u/s staff have necessary information on costs of procedures.							
u/s staff work efficiently.							
u/s service planning is well integrated with other service planning.							
Institutional managers regularly consult with referring medical practitioners when planning u/s services.							
Ethical considerations are addressed effectively when developing and planning u/s services.							

PART 3: SURVEY QUESTIONS — **LEVEL OF IMPORTANCE**

Part 3 asks you to indicate the level of **IMPORTANCE** you give to the following statements in relation to your use of the **Palmerston North Hospital's** ultrasound facility. For each question, please tick the box which best represents your opinion.

ABBREVIATION: u/s = Ultrasound

	LEVEL OF IMPORTANCE						
Access	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
Expanding hours of u/s service would not be feasible due to cost constraints.							
u/s staff always ensure patient privacy and confidentiality.							
Patient u/s appointments are available within an acceptable period of time.							
u/s staff ensure that scheduling of appointments are convenient for the patients.							
Patient waiting time for u/s examination at the u/s service is acceptable.							
The u/s service runs smoothly and efficiently.							
Location of u/s is convenient for outpatients.							
Technically Advanced							
u/s staff keep up-to-date with latest relevant technologies.							
There is appropriate upgrading of u/s technical equipment in view of cost constraints.							
Professionalism							
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures.							
u/s staff provide patients with necessary information before administering tests and procedures.							
u/s staff provide necessary information to patients following tests and procedures.							
u/s staff always anticipate needs of and intervene with anxious patients.							
u/s staff should better ensure informed consent is obtained prior to carrying out procedures.							
u/s staff-patient interaction is consistently positive.							
Patients rarely become upset as a result of the u/s procedures.							
u/s diagnoses are consistently accurate.							
Outcomes of u/s diagnosis are appropriately reviewed.							

	LEVEL OF IMPORTANCE						
Training and Support	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
There is adequate monitoring of radiologists.							
u/s staff are well trained in using equipment.							
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff.							
Medical practitioners need increased education on common u/s investigations to improve patient preparation.							
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service.							
u/s staff actively encourage medical practitioners to learn more about available services.							
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations.							
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations.							
Radiologist are available to competently carry out all specialised u/s procedures.							
Reports and Communication							
Advice regarding u/s is readily available when requested by referring medical practitioners.							
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary.							
There are frequently delayed u/s diagnoses which adversly affect patient care outcomes.							
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff.							
u/s reports accurately address the clinical questions.							
Staff Relations							
There is close collaboration between radiologists and hospital-based medical practitioners.							
There is close collaboration between radiologists and community-based practitioners.							
u/s staff have all relevant patient information to carry out procedures with patients.							
u/s staff encourage and respond to feedback from referring physicians to improve the service.							

	LEVEL OF IMPORTANCE						
Orientation towards needs of Medical Practitioners	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them.							
u/s staff are friendly and courteous.							
Planning Ultrasound Services							
Expansion of u/s services have been appropriate.							
u/s staff have necessary information on costs of procedures.							
u/s staff work efficiently.							
u/s service planning is well integrated with other service planning.							
Institutional managers regularly consult with referring medical practitioners when planning u/s services.							
Ethical considerations are addressed effectively when developing and planning u/s services.							

PART 4: INFORMATION ABOUT YOURSELF

Please tick in the appropriate bracket the response which best describes your position held.

HOSPITAL HEALTH SERVICES:

Consultant	( )
Medical Officer Special Scale	( )
Registrar	( )
Senior House Officer	( )
House Surgeon	( )
Trainee Intern/Clinical Assistant	( )
Other _____	( )

COMMUNITY BASED HEALTH SERVICE:

GP in Independent Practice	( )
GP In Partnership	( )
Locum	( )
GP Registrars	( )
Specialists	( )
Medical Officer Special Scale	( )
Other _____	( )

How many years have you been working in your currently held **JOB CATEGORY?** Please tick in appropriate bracket.

0-1	( )
2-4	( )
5-7	( )
8-10	( )
11+	( )

How many years have you been working in your **PRESENT POSITION?** Please tick in appropriate bracket.

0-1	( )
2-4	( )
5-7	( )
8-10	( )
11+	( )

In which part of the Palmerston North region do you mostly work? Please tick in appropriate bracket.

Palmerston North	( )
Feilding	( )
Levin	( )
Otaki	( )
Other _____	

Have you attended inservices or seminars on ultrasound in the last five years? Please tick in appropriate bracket.

yes	( )
no	( )

What is your age? Please tick in appropriate bracket.

22 - 25 years	( )
26 - 30 years	( )
31 - 35 years	( )
36 - 40 years	( )
41 - 45 years	( )
46 - 50 years	( )
51 - 55 years	( )
56 - 60 years	( )
61 plus years	( )

Please indicate if you hold any of the following COLLEGE MEMBERSHIPS? Please tick in appropriate bracket.

Anaesthetics	( )
Cardiology	( )
Community Medicine	( )
Dermatology	( )
Diagnostic Radiology	( )
General Medicine	( )
General Practice	( )
Geriatric Medicine	( )
Obstetrics and Gynaecology	( )
Ophthalmology	( )
Orthopaedic Surgery	( )
Otolaryngology	( )
Paediatrics	( )
Pathology	( )
Psychological Medicine or Psychiatry	( )
Radiotherapy	( )
Surgery: General Surgery	( )
Urology	( )

Other _____

Do you hold any additional **professional qualifications**? Please tick in appropriate bracket.

No additional qualifications held	( )
Additional basic qualifications held	( )
Additional specialist qualifications held	( )

What is your sex? Please tick in appropriate bracket?

male	( )
female	( )

ARE THERE ANY AREAS WHERE YOU FEEL IMPROVEMENTS SHOULD BE MADE IN THE PALMERSTON NORTH HOSPITAL ULTRASOUND SERVICE IN RELATION TO SERVICE QUALITY?

_____

_____

_____

ARE THERE ANY FURTHER COMMENTS THAT YOU WOULD LIKE TO ADD IN RELATION TO THE PALMERSTON NORTH HOSPITAL ULTRASOUND SERVICE?

_____

_____

_____

_____

T H A N K Y O U F O R Y O U R H E L P !

PLEASE FOLD AND RETURN THIS QUESTIONNAIRE TO:

MOLLY KAVET
MA[redacted]
MA[redacted]
PR[redacted]
PA[redacted]

APPENDIX 2

PROVIDER SURVEY

21 August, 1990

As part of the fulfillment of research requirements for my Master's Degree in Business Studies at Massey University, I would appreciate your assistance in completing the enclosed questionnaire. The purpose of the survey is to gain your opinions on various aspects of the **Palmerston North Hospital's** ultrasound service.

You have been selected as one of the staff of the ultrasound service provided by the Palmerston North hospital. Information from this survey will be analysed and used to look at possible factors which contribute to the quality of the service.

The survey is divided into three parts.

- Part 1: Information about yourself (demographic data)
- Part 2: Survey statements: Level of Agreement
- Part 3: Survey statements: Level of Importance

Parts 2 and 3 include statements about various aspects of the ultrasound service. Part 2 asks the extent to which you agree with the statements. These statements are repeated in Part 3 where you will be asked the level of importance you give to each statement.

After completing this questionnaire, please return it in the envelope enclosed. If you do not make referrals to the Palmerston North Hospital ultrasound service, please return the uncompleted questionnaire in the envelope enclosed.

All responses will be treated in the strictest confidence and individual responses will not be identified.

Should you have any queries, please feel free to phone me on [redacted] (home) or [redacted] (work). Thank you for your assistance in completing and returning this questionnaire.

Yours sincerely,

Molly Kavet

PART 1: INFORMATION ABOUT YOURSELF

Which of the following positions do you hold? Please tick in appropriate bracket.

Radiologist ( )
Medical Radiation Technologist (MRT) ( )
Medical Radiation Technologist in Training for Ultrasound ( )
MRT on Ultrasound Register ( )
Registered Nurse ( )
Clerical ( )
Manager/Administrator ( )
Other (please specify):
_____

Do you hold any additional **professional qualifications**? Please tick in appropriate bracket.

No additional qualifications held ( )
Additional basic qualifications held ( )
Additional specialist qualifications held ( )

Do you belong to any **professional associations** related to your current job? Please tick in appropriate bracket.

yes ( )
no ( )

How many years have you been working in your current **job category**?. Please tick appropriate bracket.

0-1 ( )
2-4 ( )
5-7 ( )
8-10 ( )
11+ ( )

How many years have you held your **present position**? Please tick in appropriate bracket.

0-1 ( )
2-4 ( )
5-7 ( )
8-10 ( )
11+ ( )

What percent of your work is spent on **clinical** versus managerial activities

Clinical activities _____ %

What is your age? Please tick in appropriate bracket.

22 - 25 years ( )
26 - 30 years ( )
31 - 35 years ( )
36 - 40 years ( )
41 - 45 years ( )
46 - 50 years ( )
51 - 55 years ( )
56 - 60 years ( )
61 plus years ( )

What is your sex? Please tick in appropriate bracket?

male ( )
female ( )

PART 2: SURVEY QUESTIONS — **LEVEL OF AGREEMENT**

Part 2 asks you to indicate the extent to which you **AGREE** with the following statements in relation to your use of the **Palmerston North Hospital's** ultrasound facility. For each question, please tick the box which best represents your opinion.

ABBREVIATION: u/s = Ultrasound

	LEVEL OF AGREEMENT						
Access	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
Expanding hours of u/s service would not be feasible due to cost constraints.							
u/s staff always ensure patient privacy and confidentiality.							
Patient u/s appointments are available within an acceptable period of time.							
u/s staff ensure that scheduling of appointments are convenient for the patients.							
Patient waiting time for u/s examination at the u/s service is acceptable.							
The u/s service runs smoothly and efficiently.							
Location of u/s is convenient for outpatients.							
Technically Advanced							
u/s staff keep up-to-date with latest relevant technologies.							
There is appropriate upgrading of u/s technical equipment in view of cost constraints.							
Professionalism							
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures.							
u/s staff provide patients with necessary information before administering tests and procedures.							
u/s staff provide necessary information to patients following tests and procedures.							
u/s staff always anticipate needs of and intervene with anxious patients.							
u/s staff should better ensure informed consent is obtained prior to carrying out procedures.							
u/s staff-patient interaction is consistently positive.							
Patients rarely become upset as a result of the u/s procedures.							
u/s diagnoses are consistently accurate.							
Outcomes of u/s diagnosis are appropriately reviewed.							

	LEVEL OF AGREEMENT						
Training and Support	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
There is adequate monitoring of radiologists.							
u/s staff are well trained in using equipment.							
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff.							
Medical practitioners need increased education on common u/s investigations to improve patient preparation.							
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service.							
u/s staff actively encourage medical practitioners to learn more about available services.							
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations.							
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations.							
Radiologist are available to competently carry out all specialised u/s procedures.							
Reports and Communication							
Advice regarding u/s is readily available when requested by referring medical practitioners.							
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary.							
There are frequently delayed u/s diagnoses which adversly affect patient care outcomes.							
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff.							
u/s reports accurately address the clinical questions.							
Staff Relations							
There is close collaboration between radiologists and hospital-based medical practitioners.							
There is close collaboration between radiologists and community-based practitioners.							
u/s staff have all relevant patient information to carry out procedures with patients.							
u/s staff encourage and respond to feedback from referring physicians to improve the service.							

	LEVEL OF AGREEMENT						
Orientation towards needs of Medical Practitioners	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Don't Know	Not Applic-able
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them.							
u/s staff are friendly and courteous.							
Planning Ultrasound Services							
Expansion of u/s services have been appropriate.							
u/s staff have necessary information on costs of procedures.							
u/s staff work efficiently.							
u/s service planning is well integrated with other service planning.							
Institutional managers regularly consult with referring medical practitioners when planning u/s services.							
Ethical considerations are addressed effectively when developing and planning u/s services.							

PART 3: SURVEY QUESTIONS — **LEVEL OF IMPORTANCE**

Part 3 asks you to indicate the level of **IMPORTANCE** you give to the following statements in relation to your use of the **Palmerston North Hospital's** ultrasound facility. For each question, please tick the box which best represents your opinion.

ABBREVIATION: u/s = Ultrasound

	LEVEL OF IMPORTANCE						
Access	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
Expanding hours of u/s service would not be feasible due to cost constraints.							
u/s staff always ensure patient privacy and confidentiality.							
Patient u/s appointments are available within an acceptable period of time.							
u/s staff ensure that scheduling of appointments are convenient for the patients.							
Patient waiting time for u/s examination at the u/s service is acceptable.							
The u/s service runs smoothly and efficiently.							
Location of u/s is convenient for outpatients.							
Technically Advanced							
u/s staff keep up-to-date with latest relevant technologies.							
There is appropriate upgrading of u/s technical equipment in view of cost constraints.							
Professionalism							
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures.							
u/s staff provide patients with necessary information before administering tests and procedures.							
u/s staff provide necessary information to patients following tests and procedures.							
u/s staff always anticipate needs of and intervene with anxious patients.							
u/s staff should better ensure informed consent is obtained prior to carrying out procedures.							
u/s staff-patient interaction is consistently positive.							
Patients rarely become upset as a result of the u/s procedures.							
u/s diagnoses are consistently accurate.							
Outcomes of u/s diagnosis are appropriately reviewed.							

	LEVEL OF IMPORTANCE						
Training and Support	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
There is adequate monitoring of radiologists.							
u/s staff are well trained in using equipment.							
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff.							
Medical practitioners need increased education on common u/s investigations to improve patient preparation.							
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service.							
u/s staff actively encourage medical practitioners to learn more about available services.							
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations.							
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations.							
Radiologist are available to competently carry out all specialised u/s procedures.							
Reports and Communication							
Advice regarding u/s is readily available when requested by referring medical practitioners.							
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary.							
There are frequently delayed u/s diagnoses which adversly affect patient care outcomes.							
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff.							
u/s reports accurately address the clinical questions.							
Staff Relations							
There is close collaboration between radiologists and hospital-based medical practitioners.							
There is close collaboration between radiologists and community-based practitioners.							
u/s staff have all relevant patient information to carry out procedures with patients.							
u/s staff encourage and respond to feedback from referring physicians to improve the service.							

	LEVEL OF IMPORTANCE						
Orientation towards needs of Medical Practitioners	Very Important	Important	Neither Imp. nor unimport.	Unimpor-tant	Very Unimpor-tant	Not Sure	Not Applic-able
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them.							
u/s staff are friendly and courteous.							
Planning Ultrasound Services							
Expansion of u/s services have been appropriate.							
u/s staff have necessary information on costs of procedures.							
u/s staff work efficiently.							
u/s service planning is well integrated with other service planning.							
Institutional managers regularly consult with referring medical practitioners when planning u/s services.							
Ethical considerations are addressed effectively when developing and planning u/s services.							

ARE THERE ANY AREAS WHERE YOU FEEL IMPROVEMENTS SHOULD BE MADE IN THE PALMERSTON NORTH HOSPITAL ULTRASOUND SERVICE IN RELATION TO SERVICE QUALITY?

_____

_____

_____

ARE THERE ANY FURTHER COMMENTS THAT YOU WOULD LIKE TO ADD IN RELATION TO THE PALMERSTON NORTH HOSPITAL ULTRASOUND SERVICE?

_____

_____

_____

_____

T H A N K Y O U F O R Y O U R H E L P !

PLEASE FOLD AND RETURN THIS QUESTIONNAIRE TO:

MOLLY KAVET
[redacted]
BAG
[redacted]

APPENDIX 3

FOLLOW-UP LETTER

21 September, 1990

Dear Dr.

Recently you should have received a questionnaire about the Ultrasound Service provided by Palmerston North Hospital. So far, only a small number of these have been returned.

I would be grateful if you would complete the questionnaire and post it to me as soon as possible. A high return rate is essential for this study to be meaningful.

If you have any questions please contact me:

Molly Kavet
Massey University, Management Systems
Private Bag, Palmerston North
Phone: work [redacted]

Your opinion is a valuable one in assisting with this project. Thank you for your help in this study.

Yours sincerely,

Molly Kavet
Management Systems

APPENDIX 4

Results of Gap Analysis

Customer Responses

The Gap — The nearer the score is to 1.00, the greater the performance. A negative number indicates that the service performance does not reach the expectation.

Calculation of the Gap

$$\frac{\sum (I_i - A_i)}{n} = \bar{G}$$

Where: I_i = *Individual Importance*
A_i = *Individual Agreement*
$\bar{G}$ = *Average Gap*
n = *Sample Size*

(*note*: *excluding don't know / not sure responses*)

The Spread — The larger the spread, the greater the discrepency in perceptions of the service feature.

Calculation of the Spread

$$\sum \frac{(A_i - I_i)^2}{n}$$

(*note*: *excluding don't know / not sure responses*)

CUSTOMER RESPONSIVENESS

u/s = ultrasound

STATEMENT	CUSTOMER GAP	CUSTOMER SPREAD	PROVIDER GAP	PROVIDER SPREAD
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff	.19	.13	.25	.25
Medical practitioners need increased education on common u/s investigations to improve patient preparation	-1.05	.57	-.17	.29
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service	-.51	.14	.17	.29
u/s staff actively encourage medical practitioners to learn more about available services	-1.07	.19	-.60	.45
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations	-.33	.13	.17	.17
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	-1.19	.20	0	0
Radiologist are available to competently carry out all specialised u/s procedures	-.54	.17	-.43	.25
Advice regarding u/s is readily available when requested by referring medical practitioners when urgent follow-up is necessary	-.42	.12	-.57	.35
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary	-.87	.17	-.43	.25
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	-1.79	.32	-3.67	2.1

u/s = ultrasound

STATEMENT	GAP	SPREAD	GAP	SPREAD
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures	-1.73	.18	-.14	.25
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them	-.44	.13	-.33	.24
u/s staff are friendly and courteous	-.30	.10	-.43	.25

STATEMENT	CUSTOMERS GAP	CUSTOMERS SPREAD	PROVIDERS GAP	PROVIDERS SPREAD
Expanding hours of u/s service would not be feasible due to cost constraints	-.17	.24	.20	.60
The u/s service runs smoothly and efficiently	-.57	.14	-.57	.29
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	-1.54	.28	-2.50	1.8
u/s staff have necessary information on costs of procedures	-.63	.28	.60	.60
u/s staff work efficiently	-.45	.14	-.57	.29

u/s = ultrasound

STATEMENT	CUSTOMER GAP	CUSTOMER SPREAD	PROVIDER GAP	PROVIDER SPREAD
There is close collaboration between radiologists and hospital-based medical practitioners	-.70	.16	-.57	.29
There is close collaboration between radiologists and community-based practitioners	-1.33	.30	-1.17	.65
u/s staff encourage and respond to feedback from referring physicians to improve the service	-1.02	.20	-.14	.14
u/s service planning is well integrated with other service planning	-.45	.22	-.4	.28
Institiutional managers regularly consult with referring medical practitioners when planning u/s services	-2.57	.51	-1.33	1.05
Ethical considerations are addressed effectively when developing and planning u/s services	-1.25	.42	-.25	.25
Expansion of u/s services has been appropriate	-.40	.19	-1.0	.66

u/s – ultrasound

STATEMENT	CUSTOMER GAP	CUSTOMER SPREAD	PROVIDER GAP	PROVIDER SPREAD
u/s staff keep up-to-date with latest relevant technologies	-.42	.13	-.33	.24
There is appropriate upgrading of u/s technical equipment in view of cost constraints	-.35	.15	-.17	.17
u/s staff should better ensure informed consent is obtained prior to carrying out procedures	-.80	.25	-1	.71
u/s diagnoses are consistently accurate	-1.32	.21	-.67	.67
Outcomes of u/s diagnosis re appropriately reviewed	.66	.16	-1	.43
There is adequate monitoring of radiologists	-.43	.22	-.167	1.1
u/s staff are well trained in using equipment	-.36	.16	-.43	.25
u/s reports accurately address the clinical questions	-.58	.12	-.57	.29
u/s staff have all relevant patient information to carry out procedures with patients	-1.38	.27	-1.29	.59

PATIENT RESPONSIVENESS

u/s = ultrasound

	CUSTOMER		PROVIDER	
STATEMENT	GAP	SPREAD	GAP	SPREAD
u/s staff always ensure patient privacy and confidentiality	-.52	.16	-.57	.29
Patient u/s appointments are available within an acceptable period of time	-.83	.16	.14	.25
u/s staff ensure that scheduling of appointments are convenient for the patients	-.73	.21	0	.20
Patient waiting time for u/s examination at the u/s service is acceptable	-.60	.17	-.29	.29
Location of u/s is convenient for outpatients	.04	.12	0	.24
u/s staff provide patients with necessary information before administering tests and procedures	-.39	.13	-.29	.29
u/s staff provide necessary information to patients following tests and procedures	-.12	.23	-.17	.29
u/s staff always anticipate needs of and intervene with anxious patients	-.90	.26	-.71	.29
u/s staff-patient interaction is consistently positive	-.71	.22	-1	.32
Patients rarely become upset as a result of the u/s procedures	-.26	.10	-.14	.71

APPENDIX 5

AGREEMENT RATINGS - IMPORTANCE RATINGS

Differences in agreement ratings and importance ratings between customer and provider based on individual service quality statements.

$$\frac{Ac - Ap}{Ic - Ip}$$

A negative number indicates that the customer level of agreement is less than the provider.

A positive number indicates the customer level of agreement is greater than the provider.

CUSTOMER RESPONSIVENESS STATEMENT	AGREEMENT	IMPORTANCE
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff	.1	.5
Medical practitioners need increased education on common u/s investigations to improve patient preparation	.4	.3
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service	-.1	0
u/s staff actively encourage medical practitioners to learn more about available services	-.2	-.2
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations	.5	-.1
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	.6	.1
Radiologist are available to competently carry out all specialised u/s procedures	.4	.3
Advice regarding u/s is readily available when requested by referring medical practitioners when urgent follow-up is necessary	.2	.3
Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary	.5	.2
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	.3	1.0
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures	.8	.3
Medical practitioners are given full attention by the u/s staff	.5	.3
u/s staff are friendly and courteous	.5	.5

MANAGEMENT EFFICIENCY STATEMENT	AGREEMENT	IMPORTANCE
Expanding hours of u/s service would not be feasible due to cost constraints	-.1	-.1
The u/s service runs smoothly and efficiently	.3	.4
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	-.9	.6
u/s staff have necessary information on costs of procedures	.8	.5
u/s staff work efficiently	.3	.4

CUSTOMER ORIENTATION RE: SERVICE DEVELOPMENT STATEMENT	AGREEMENT	IMPORTANCE
There is close collaboration between radiologists and hospital-based medicalpractitioners	.2	.2
There is close collaboration between radiologists and community-based practitioners	.5	.2
u/s staff encourage and respond to feedback from referring physicians to improve the service	1	.1
u/s service planning is well integrated with other service planning	.6	.4
Institiutional managers regularly consult with referring medical practitioners when planning u/s services	1.7	1.1
Ethical considerations are addressed effectively when developing and planning u/s services	1.4	.5
Expansion of u/s services has been appropriate	.1	.6

CLINICAL ASSURANCE STATEMENT	AGREEMENT	IMPORTANCE
u/s staff keep up-to-date with latest relevant technologies	.4	.3
There is appropriate upgrading of u/s technical equipment in view of cost constraints	.8	.4
u/s staff should better ensure informed consent is obtained prior to carrying out procedures	0	.3
u/s diagnoses are consistently accurate	.6	.1
Outcomes of u/s diagnosis re appropriately reviewed	0	.1
There is adequate monitoring of radiologists	.3	.8
u/s staff are well trained in using equipment	.5	.6
u/s reports accurately address the clinical questions	.3	.3
u/s staff have all relevant patient information to carry out procedures with patients	-1.2	.3

PATIENT RESPONSIVENESS STATEMENT	AGREEMENT	IMPORTANCE
u/s staff always ensure patient privacy and confidentiality	.4	.5
Patient u/s appointments are available within an acceptable period of time	.7	-.3
u/s staff ensure that scheduling of appointments are convenient for the patients	.4	0
Patient waiting time for u/s examination at the u/s service is acceptable	.1	-.5
Location of u/s is convenient for outpatients	.9	-.1
u/s staff provide patients with necessary information before administering tests and procedures	.2	.1
u/s staff provide necessary information to patients following tests and procedures	.7	.3
u/s staff always anticipate needs of and intervene with anxious patients	.6	.5
u/s staff-patient interaction is consistently positive	.5	0
Patients rarely become upset as a result of the u/s procedures	-.1	.2

APPENDIX 6

SUMMARY OF RESULTS: CUSTOMER RESPONSES WITH GAP IN EXCESS OF 1.0 AND HIGH IMPORTANCE RATINGS

Statement	Gap	Importance
Institutional managers regularly consult with referring medical practitioners when planning u/s services	-2.57	2.4
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	-1.79	2.0
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	-1.54	2.1
u/s staff have all relevant patient information to carry out procedures with patients	-1.38	1.6
There is close collaboration between radiologists and community-based practitioners	-1.33	1.7
u/s diagnoses are consistently accurate	-1.32	1.54
Ethical considerations are addressed effectively when developing and planning u/s services	-1.25	2.0
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	-1.19	1.9
u/s staff actively encourage medical practitioners to learn more about available services	-1.07	2.3

APPENDIX 7

SUMMARY OF RESULTS: CUSTOMER RESPONSES WITH HIGH IMPORTANCE RATINGS AND HIGH SPREAD

Radiologists promptly advise referring medical practitioners when urgent follow-up is necessary	1.3	-.87
Patient u/s appointments are available within an acceptable period of time	1.4	-.83
u/s staff always ensure patient privacy and confidentiality	1.5	-.52
u/s staff keep up-to-date with latest relevant technologies	1.5	-.42
There is close collaboration between radiologist and hospital-based medical practitioners	1.5	-.70
u/s diagnoses are consistently accurate	1.5	-1.32
There is appropriate upgrading of u/s technical equipment in view of cost constraints	1.6	-.35
Outcomes of u/s diagnosis are appropriately reviewed	1.6	-.66
u/s staff are well trained in using equipment	1.6	-.36
Radiologist are available to competently carry out all specialised u/s procedures	1.6	-.54
Advice regarding u/s is readily available when requested by referring medical practitioners	1.6	-.42
u/s reports accurately address the clinical questions	1.6	-.58
u/s staff have all relevant patient information to carry out procedures with patients	1.6	-1.38

APPENDIX 8

CUSTOMER MEAN AGREEMENT - IMPORTANCE RATINGS

STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff	2.6	3.3
Medical practitioners need increased education on common u/s investigations to improve patient preparation	2.4	2.1
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service	1.5	2.1
u/s staff actively encourage medical practitioners to learn more about available services	2.4	2.3
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations	2.5	2.1
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	2.4	1.9
Radiologist are available to competently carry out all specialised u/s procedures	2.1	1.6
Advice regarding u/s is readily available when requested by referring medical practitioners when urgent follow-up is necessary	2.1	1.6
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	3.8	2.0
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures	2.5	1.9
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them	2.3	1.8
u/s staff are friendly and courteous	2.2	1.8

CUSTOMER MEAN RATINGS

MANAGEMENT ABILITY STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
Expanding hours of u/s service would not be feasible due to cost constraints	2.6	2.7
The u/s service runs smoothly and efficiently	2.2	1.7
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	2.4	2.1
u/s staff have necessary information on costs of procedures	3.0	2.1
u/s staff work efficiently	2.1	1.7

CUSTOMER MEAN RATINGS

CUSTOMER ORIENTATION RE: SERVICE DEVELOPMENT STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
There is close collaboration between radiologists and hospital-based medical practitioners	2.1	1.5
There is close collaboration between radiologists and community-based practitioners	3.2	1.7
u/s staff encourage and respond to feedback from referring physicians to improve the service	2.6	1.7
u/s service planning is well integrated with other service planning	2.4	1.8
Institiutional managers regularly consult with referring medical practitioners when planning u/s services	4.4	2.4
Ethical considerations are addressed effectively when developing and planning u/s services	3.2	2.0
Expansion of u/s services has been appropriate	2.3	1.9

CUSTOMER MEAN RATINGS

CLINICAL ASSURANCE STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
u/s staff keep up-to-date with latest relevant technologies	1.9	1.5
There is appropriate upgrading of u/s technical equipment in view of cost constraints	2.1	1.6
u/s staff should better ensure informed consent is obtained prior to carrying out procedures	3.0	2.1
u/s diagnoses are consistently accurate	2.9	1.5
Outcomes of u/s diagnosis re appropriately reviewed	2.3	1.6
There is adequate monitoring of radiologists	2.1	1.8
u/s staff are well trained in using equipment	1.9	1.6
u/s reports accurately address the clinical questions	2.2	1.6
u/s staff have all relevant patient information to carry out procedures with patients	2.9	1.6

CUSTOMER MEAN RATINGS

PATIENT RESPONSIVENESS STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
u/s staff always ensure patient privacy and confidentiality	2.6	1.5
Patient u/s appointments are available within an acceptable period of time	2.3	1.4
u/s staff ensure that scheduling of appointments are convenient for the patients	2.4	2.0
Patient waiting time for u/s examination at the u/s service is acceptable	2.4	1.9
Location of u/s is convenient for outpatients	2.0	2.1
u/s staff provide patients with necessary information before administering tests and procedures	2.1	1.7
u/s staff provide necessary information to patients following tests and procedures	2.5	2.0
u/s staff always anticipate needs of and intervene with anxious patients	2.6	1.8
u/s staff-patient interaction is consistently positive	2.5	1.9
Patients rarely become upset as a result of the u/s procedures	2.3	2.0

APPENDIX 9

PROVIDER MEAN AGREEMENT - IMPORTANCE RATINGS

PROVIDER MEAN RATINGS

CUSTOMER RESPONSIVENESS STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
More obstetric medical practitioners should be trained to carry out u/s procedures by u/s staff	2.5	2.8
Medical practitioners need increased education on common u/s investigations to improve patient preparation	2.0	1.8
Medical practitioners need increased education from u/s staff on common u/s investigations to ensure appropriate use of service	1.6	1.8
u/s staff actively encourage medical practitioners to learn more about available services	2.6	2.5
Medical practitioners need more information on u/s staff role in advising on selection of appropriate u/s investigations	2.0	2.2
u/s staff provide adequate clinical guidelines to medical practitioners to prepare patients for commonly requested examinations	1.8	1.8
Radiologist are available to competently carry out all specialised u/s procedures	1.7	1.3
Advice regarding u/s is readily available when requested by referring medical practitioners when urgent follow-up is necessary	1.9	1.3
There are frequently delayed u/s diagnoses which adversely affect patient care outcomes	3.5	1.0
u/s staff provide medical practitioners with necessary information to prepare patients for u/s tests and procedures	1.7	1.6
Medical practitioners are given full attention by the u/s staff when u/s staff interact with them	1.8	1.5
u/s staff are friendly and courteous	1.7	1.3

PROVIDER MEAN RATINGS

MANAGEMENT ABILITY STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
Expanding hours of u/s service would not be feasible due to cost constraints	2.7	2.8
The u/s service runs smoothly and efficiently	1.9	1.3
Delays in reporting u/s outcomes to patients are caused by careless attention to processing reports by u/s staff	3.5	1.5
u/s staff have necessary information on costs of procedures	2.2	1.6
u/s staff work efficiently	1.9	1.3

PROVIDER MEAN RATINGS

CUSTOMER ORIENTATION RE: SERVICE DEVELOPMENT STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
There is close collaboration between radiologists and hospital-based medicalpractitioners	1.9	1.3
There is close collaboration between radiologists and community-based practitioners	2.7	1.5
u/s staff encourage and respond to feedback from referring physicians to improve the service	1.6	1.6
u/s service planning is well integrated with other service planning	1.8	1.4
Institiutional managers regularly consult with referring medical practitioners when planning u/s services	2.7	1.3
Ethical considerations are addressed effectively when developing and planning u/s services	1.8	1.5
Expansion of u/s services has been appropriate	2.3	1.3

PROVIDER MEAN RATINGS

CLINICAL ASSURANCE STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
u/s staff keep up-to-date with latest relevant technologies	1.5	1.2
There is appropriate upgrading of u/s technical equipment in view of cost constraints	1.3	1.2
u/s staff should better ensure informed consent is obtained prior to carrying out procedures	3.0	1.8
u/s diagnoses are consistently accurate	2.3	1.4
Outcomes of u/s diagnosis re appropriately reviewed	2.3	1.5
There is adequate monitoring of radiologists	1.8	1.0
u/s staff are well trained in using equipment	1.4	1.0
u/s reports accurately address the clinical questions	1.9	1.3
u/s staff have all relevant patient information to carry out procedures with patients	2.8	1.3

PROVIDER MEAN RATINGS

PATIENT RESPONSIVENESS STATEMENT	MEAN AGREEMENT	MEAN IMPORTANCE
u/s staff always ensure patient privacy and confidentiality	1.6	1.0
Patient u/s appointments are available within an acceptable period of time	1.6	1.7
u/s staff ensure that scheduling of appointments are convenient for the patients	2.0	2.0
Patient waiting time for u/s examination at the u/s service is acceptable	2.3	2.0
Location of u/s is convenient for outpatients	1.0	1.9
u/s staff provide patients with necessary information before administering tests and procedures	1.9	1.6
u/s staff provide necessary information to patients following tests and procedures	1.8	1.7
u/s staff always anticipate needs of and intervene with anxious patients	2.0	1.3
u/s staff-patient interaction is consistently positive	2.0	1.9
Patients rarely become upset as a result of the u/s procedures	2.4	1.8