ASSESSING THE EFFECTIVENESS AND QUALITY OF LIBRARIES

By

PHILIP JAMES CALVERT

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ABSTRACT

A variety of library evaluation methods have been developed, yet few have attempted to evaluate the evaluation methods. This thesis is a meta-evaluation: an evaluation of other evaluations. The merits of different evaluation are analysed. Then the relationships between the different types of evaluation are identified, and a meta-model of library evaluation created. The Research Question posed in this thesis is "What are the most useful types of library evaluation, and how are they related to each other?"

A four cell model has been developed. The two axes were chosen based upon systems theory. The *y* axis (vertical) uses two perspectives: an internal view (from the library) and an external view (the customers). The *x* axis (horizontal) is about the topic: the library itself; its collection, processes, costs, and the customer's use of its products and services. Four types of library evaluation are each placed in one cell of the matrix.

Early chapters examine library effectiveness based upon four models of organisational effectiveness. A two stage project that investigated New Zealand public library effectiveness is described. First, stakeholders said what the best statements for evaluating public library effectiveness were. Second, library staff said how well their library was performing on each of the key statements. This data was subjected to a factor analysis to create clusters of statements that are the 'dimensions' of library effectiveness. Then two chapters describe a similar project conducted in university libraries.

Later chapters describe research into library service quality based upon the SERVQUAL model. It used the Hernon-Altman method rather than the LibQUAL+ approach. The intention of the research was to understand the concept of service quality for academic libraries and then create an instrument to measure library service quality. Subsequent research adapted the instrument for use with electronic services provided by libraries.

Acknowledgements

I give my sincere thanks to my primary supervisor Beverley Hope. Thanks also to Professor Peter Hernon for his considered comments. I need also to acknowledge the contributions made by my excellent research partners Rowena Cullen and Peter Hernon.

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PART ONE: META-EVALUATION OF LIBRARY EVALUATION

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Note on works of joint authorship

My thesis is built upon published work. The author was an equal or greater than equal contributor to all the research and subsequent papers used as the basis of the thesis. All interpretation of the place of the research in the wider field, which constitutes the original contribution of the thesis to the literature, is the work of the author alone. All works by the author referred to in the thesis are included in the list that follows. The list is in alphabetic order of author, according to standard referencing practice. Numbers in parenthesis show the estimated contribution by me, Philip Calvert, first and the co-author, second.

Calvert, P. (1994). Library effectiveness: The search for a social context. *Journal of Librarianship and Information Science, 26* (1), 15-21.

Some content from this paper was used as a basis for part of Chapter Three, though in considerably revised form. In this paper I developed the thinking that lies behind the joint research described in Chapters Four to Seven. The focus on the concept of the social construct, a key element in this research and an original addition to the literature on performance measurement in libraries, was almost entirely my work.

Calvert, P. (1997). Measuring service quality: From theory into practice. *Australian Academic and Research Libraries, 28*, 198-204.

Some content from this paper was used as a basis for part of Chapter Eight, though in considerably revised form.

Calvert, P. (1998). A different time, a different country: An instrument for measuring service quality in Singapore's polytechnic libraries. *Journal of Academic Librarianship, 24*, 296-303.

A reference to this paper is made in Chapters Eight and Eleven

Calvert, P. (2000). Service quality in libraries. *The New Review of Information and Library Research*, (6), 5-23.

Some content from this paper was used as a basis for part of Chapter Eight, though in considerably revised form.

Calvert, P. (2001). International variations in measuring customer expectations. *Library Trends, 19* (4), 732-757.

A reference to this paper is made in Chapter Eight.

Calvert, P. (2005). It's a mystery: Mystery shopping in New Zealand's public libraries. *Library Review*, 54 (1), 24-35.

A reference to this paper is made in Chapter Nine.

Calvert, P.J., & Cullen, R.J. (1994). Further dimensions of public library effectiveness II: The second stage of the New Zealand study. Library & Information Science, 16, 87-104.

This paper provided the basis of Chapter Five. See Cullen, R.J., & Calvert, P.J. (1993), for details, as much the same applies to this paper.

Calvert, P.J., & Hernon, P. (1997). Surveying service quality within university libraries. *Journal of Academic Librarianship, 23* (5), 408-415.

This paper provided the basis of Chapter Ten. It followed the research described in Hernon & Calvert (1996), which was the basis of Chapter Nine, though it was a separate project. It was mostly my work, with Prof. Hernon working primarily on the literature review. The creation of the data instrument, the data collection, the data analysis and most of the writing, was my work (90-10).

Cullen, R.J., & Calvert, P.J. (1993). Further dimensions of public library effectiveness: Report of a parallel New Zealand study. Library and Information Science Research, 15, 143-164.

This paper provided the basis of Chapter Four. I was an equal partner in the research project i.e. (50–50). Prof Cullen and I developed the project together from start to finish. We both looked for relevant literature, which in this case being the first project of four, was necessary for the identification of an underlying theory, the development of a research question, choice of the best methodology to answer the question, and creation of the data collection instrument. We developed the data collection instrument together. I then performed most of the data collection and the data analysis. We shared the writing of the paper, but I have substantially re-written it for the thesis.

Cullen R.J., & Calvert, P.J. (1995). Stakeholder perceptions of university library effectiveness. *Journal of Academic Librarianship, 21* (6), 438-448.

This paper provided the basis of Chapter Six. See Cullen, R.J., & Calvert, P.J. (1993). This was the first project of two concerned with academic libraries but the

process was quite similar to the first two that investigated public libraries. The division of work between the authors was much the same as it was for the 1993 paper.

Cullen, R.J., & Calvert, P.J. (1996). New Zealand university libraries effectiveness project: dimensions and concepts of organizational effectiveness. *Library & Information Science Research, 18* (2), 99-119.

This paper provided the basis of Chapter Seven. See Cullen, R.J., & Calvert, P.J. (1993). Much the same applies to this paper.

Hernon, P., & Calvert, P.J. (1996). Methods for measuring service quality in university libraries in New Zealand. *Journal of Academic Librarianship*, 22 (5), 387-391.

This paper provided the basis of Chapter Nine. This project was conceived by Peter Hernon (10-90). We worked together on the literature review, which Prof Hernon then wrote (30-70). From that we developed the data collection instrument together (50-50). I administered the data collection instrument (100%) and did nearly all the data analysis (90-10). We then discussed the data results and wrote the conclusions together, while Prof Hernon did a short set of recommendations.

Hernon, P., & Calvert, P.J. (2005). E-service quality in libraries: Exploring its features and dimensions. *Library & Information Science Research, 27*, 377-404.

This paper provided the basis of Chapter Eleven. Prof Hernon started the literature review and I added to it (30-70). We developed different parts of the data collection instrument (50-50) and I did nearly all of the data analysis, with Prof Hernon doing the quadrant analysis (70-30). We shared the writing (50-50).

Hernon, P., & Calvert, P.J. (Eds.) (2006). *Improving the quality of library services for students with disabilities*. Westport, Conn.: Libraries Unlimited,

A reference to this paper is made in Chapter Twelve.

CHAPTER ONE

The Purpose of Evaluation

Libraries are organisations and as such they must be managed. There has been a conceptual shift from the bibliographic to the managerial aspects of running a library and job descriptions that once were for "Chief Librarians" are now more likely to be for "Library Managers". Professional programmes in education for librarianship now include more management content than was the case just twenty years ago (Kinnell, 1996). The change has occurred, first because libraries have become more complex and hence need more management, and second because there has been a general societal shift towards demanding greater accountability from organisations, especially those receiving public funding (Altman & Pratt, 1995; Himmel & Wilson, 1998; Powell, 2006). It is no longer enough to accept the 'goodness' of a library without offering justification based upon empirical evidence (Matthews, 2004, p. 13). When a demand for more marketing of library services and more external communication is added (De Saez, 2002), the case for more and better management of libraries becomes clear. Yet though there is a demand for libraries to be 'managed' there has not been a concurrent increase in the understanding of what is required for good library management. The development of theory has not always kept pace with the demands of practice. This is true in the field of library evaluation, which is a subject that barely existed until the publication of Morse's groundbreaking book in 1968. Since Morse there have been many attempts made to define the nature of library 'goodness' but none has proven to be completely convincing. The elusive nature of organisational effectiveness has led to relevant research being called the search for the "Holy Grail of management research" (Mohr, 1982). When applied to libraries it has been called "The pursuit of the Grail of Library Goodness" (Buckland, 1988, p. 241). This research joins the hunt for the Grail.

The research described in this thesis was motivated first by a desire to add to library evaluation theory, and second to give practitioners some useful tools so that they can undertake efficient and effective evaluations of their libraries. As will be seen in Chapters Three to Eleven, there is a constant mix of theory and practice throughout this work. In addition to theory building, several tools have been developed during this research that can be used by practitioners for evaluation.

The research described here was conducted in seven different projects over a period of years (1992-2004) and was published as several separate journal articles (Calvert, 1994, 1997, 1998, 2000, 2001, 2005; Calvert & Cullen, 1994; Calvert & Hernon, 1997; Cullen & Calvert, 1993, 1995, 1996; Hernon & Calvert, 1996, 2005). The central thrust of the research corpus has always been to seek a greater understanding of the best way to evaluate a library. Yet over the years during the course of these several research projects it has become apparent to the author that there is no one best way to evaluate a library, and therein is one reason for writing this thesis. There is a need to ask the first question "How many ways can we evaluate a library?" The answer, given is Chapter Two, is that there are at least four different ways, and two have been explored in depth in the research described in Chapters Three to Eleven. The next question that can be asked is "Which evaluation method is best suited to which purpose?" The answer to that depends upon the context in which the evaluation is to be used, and here the variety of evaluation methods has some definite benefits. By choosing an appropriate method the library manager can capture the data most useful to the library at a specific time. This will be explained in Chapter Two. Some authors have described the variety of library evaluation methods in some detail (Broady-Preston & Preston, 1999; Brophy, 2006; Matthews, 2002, 2004; Rowley, 2005) yet few have attempted to evaluate the variety of evaluation methods or to model library evaluation. So this thesis is a meta-evaluation: an evaluation of other evaluations (Patton, 2002). The merits of different evaluation methods have to be analysed and explained. Then the relationships between the different types of evaluation can be identified, and a meta-model of library evaluation can be created. So the overall Research Question posed in this thesis is "What are the most useful types of library evaluation, and how are they related to each other?"

1.1 Management and evaluation

Current management theory usually accepts that there are four functions of management: planning, organisation, leading, and controlling. The final function, that of controlling, deals with monitoring activities to ensure that they are accomplished as planned, and taking corrective action when the activities are not producing the desired outcomes (e.g. Bartol, Tein, Matthews & Sharma, 2008). If managers are to 'control' they must capture data about the organisation and its activities so that actual performance can be compared to the planned goals. Data about the organisation is captured through various means, including performance measurement, so that management has the option of analysing it

(Poll & Boekhorst, 1996; Powell, 2006). Yet data is not sufficient for the management function to take place, for the managers must actively consider the implications of the data and make changes if necessary, and this can be termed 'evaluation'. Evaluation is the process of determining the worth of something such as a service or process by comparing what it is to what it ought to be. Weiss defines evaluation as "the systematic assessment of the operation and/or the outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy" (1998, p. 4). That definition will be used here.

Done properly, an evaluation programme is part of library management's overall planning and quality assurance processes (Ballard, 1989; De Prospo, 1982; McClure, 1987). Libraries are organisations that must be managed, just like firms in the private sector. Libraries use resources that must accounted for, and staff must be managed, as must the buildings and equipment. Though there was a time that many people, including librarians, did not think it necessary to examine what the library was doing because it was simply assumed it was beneficial to all, that is no longer the case – the evidence for this is the almost complete absence of evaluation until the 1980s, and its significant rise since then (e.g. Himmel & Wilson, 1998; Matthews, 2004; Wang, 2006). Libraries and those who manage them are under pressure to evaluate their activities just like any other organisation (e.g. Brophy, 2006; Matthews, 2002; Rowley, 2005). The pressure to evaluate has become international (Bawden, Petuchovaite, & Vilar, 2005).

Ideally, librarians should evaluate their whole organisation on a regular basis (Bawden, 1990) but this rarely happens. Instead, parts of the library are evaluated on an irregular basis. This leaves the distinct possibility that the problems that come to management's attention arise in parts of the system that are not being evaluated and so escape attention. For example, the perception may exist among library staff they are under-staffed and think an evaluation may prove this. When a British local authority was challenged to investigate alleged under-staffing, it conducted an evaluation of staff outputs and discovered that some professional staff spent up to 25% of their time classifying junior non-fiction books that central services had deliberately stopped classifying. This does not prove who was right and wrong about classifying junior non-fiction, but it suggests that an evaluation of central services alone would report an increase in productivity because they had stopped this activity, but in practice the work had simply moved to another area. An alternative interpretation of this situation is that central services could be relied upon to decide

whether or not to classify junior non-fiction, and the staff who took it upon themselves to do it were increasing their own inefficiency – which they did not themselves accept because they were reluctant to regard the system as whole and preferred to make localised decisions (reported in Bird, 1981, p. 21).

Before going on in subsequent chapters to consider methods of evaluating libraries, it will be useful to consider all the various reasons for library evaluation. One early writer gave only two reasons for evaluation:

1. to convince the funders and the clients that the service is delivering the benefits that were expected when the investment was made;
2. as an internal control mechanism (Blagden, 1975)

With the passage of time the list has expanded and Powell's list (2006) below includes ten reasons for evaluation. The breadth of reasons on the list is a reminder to library managers that evaluation should be more than fire-fighting. Evaluation, Powell says, is necessary because libraries need to:

1. Account for how they use their limited resources
2. Explain what they do
3. Enhance their visibility
4. Describe their impact
5. Increase efficiency
6. Avoid errors
7. Support planning activities
8. Express concern for their public
9. Support decision making
10. Strengthen their political position

The addition of elements of marketing and external communication (points 2, 3, 4, 8 and 10) to the list show that evaluation has developed from a narrow focus to a broader one with multiple purposes. Managers now expect evaluation to provide them with information useful for several different management functions, and this has placed greater expectations on evaluation itself. Instead of being a relatively simple process with a narrow aim, it is now multi-faceted extending throughout the organisation. This is one reason why different methods of library evaluation have been developed – they were designed for different purposes (Broady-Preston & Preston, 1999).

In broad terms the purpose of library evaluation is to

- gather data for the support of management operations including planning and resource allocation,
- provide material for feedback to funding agencies and customers,
- help with the marketing of products and services.

In more specific terms, though, what does library evaluation do? Library evaluation can be expressed as a series of questions that need to be answered. A set of eleven questions has been used in this research:

1. how much?
2. how many?
3. how economical?
4. how prompt?
5. how accurate?
6. how responsive?
7. how well?
8. how valuable?
9. how reliable?
10. how courteous?
11. how satisfied?

(Hernon & Altman, 1998, pp. 51-54)

First, library managers must look for the data that can best answer each question. To uncover the answers to the eleven questions a variety of measures need to be used. They include input, output, process and outcome measures discussed in Chapter Two. Measurement is the act of determining the magnitude of a quantity. If standard units can be applied then measurement can be clearly understood by all. If there is no standard measurement, e.g. for customer satisfaction, measurement can still take place but the results will have to be contextualised before they are comprehensible to others. Measurement alone solves no problems. It simply provides data that can be used in more cerebral activities, such as evaluation. As will be explained in subsequent chapters, there is no single type of measure that can answer all the eleven questions in Hernon and Altman's list. Having gathered the data from measurement, managers must then analyse the data to see if it sheds light on problems within the library. If it does, the managers will then try to correct any problems.

1.2 Thesis structure

What is unusual about this thesis is that it contains research previously published in several different journal articles, but all the research is common to the main theme of library evaluation and helps to answer the Research Question. It is structured in four parts. The first two chapters constitute Part One, with the first chapter (this one) simply introducing the topic and posing the Research Question. The main literature review, an element common to all theses, is in Chapter Two. What is perhaps unusual about this literature review is that it was partly done before the research was conducted between 1992 and 2004, and partly after it. Naturally a literature review was conducted before all the research projects described here, and this was included in the journal article that was subsequently published after each project was concluded. Because some of that literature was relevant to more than one project, and hence was duplicated in the different journal articles, that literature has been removed from the chapters describing the different research projects (that is, Chapters Four to Seven, and Chapters Nine to Eleven). Literature related to only one project remains attached to that project in the relevant chapter of the thesis (most extensively in Chapter Eleven). The literature removed from the separate chapters has been combined with literature gathered more recently and used to develop themes that are the central focus of Chapter Two.

In Chapter Two it is recognised that the research into library evaluation that forms the core of this thesis focussed only on two types of library evaluation; that is, measuring library effectiveness, and evaluating library service quality. Yet the literature describes at least two other types of library evaluation and so in Chapter Two an attempt has been made to create a model of these four types of library evaluation. Using the Open Systems Model, a four cell matrix has been developed for this thesis. The two axes have been chosen based upon what was revealed by systems theory. The *y* axis (vertical) uses two perspectives: an internal view (from the library) and an external view (the customers). The *x* axis (horizontal) is about the topic: the library itself; its collection, processes, costs, and the customer's use of its products and services. Four types of library evaluation have been described in detail in Chapter Two, and each one placed in a cell of the matrix. First, traditional input, output and process measures are discussed. For many years this was the only type of evaluation used in libraries and the method of counting what can be counted is still very prevalent. It has its uses, but this type of evaluation does not answer all the questions posed in Hernon and Altman's list (1998). Other types of evaluation have therefore been developed. One of them, the evaluation of library effectiveness, was the

subject of extensive research in the early 1990s, and this thesis includes five chapters that emanated from research projects conducted in New Zealand during the period 1991 to 1995. The second major theme in this thesis is the third type of evaluation described in Chapter Two, customer service quality. Separate projects were conducted in 1995-6 and 2004 and these appear in the second half of the thesis. The final type of evaluation placed in the matrix is value assessment. This is rather problematic because value is often regarded as short-term, though libraries – through collection development, as an example, often think of building long-term value. Outcomes measurement is included as part of value assessment. Impact assessment is regarded as synonymous with outcomes for the rest of this thesis. Outside the matrix, but still important to a study of library evaluation, the literature review encompasses recent developments in the use of the balanced scorecard.

Part Two of the thesis deals with four separate research projects on the theme of performance measurement of library effectiveness. The section has one introductory chapter (Chapter Three) and then four subsequent chapters that describe each stage of the research into library effectiveness conducted in New Zealand between 1991 and 1995, based upon the theories of organisational effectiveness first developed by Cameron (1978, 1981, 1986), and developed for libraries by McDonald and Micikas (1994). Chapter Three explains the theory that lies behind all the separate research projects, including the four models of organisational effectiveness that are central to an understanding of the research. Chapters Four and Five are based upon a two stage project that investigated views of effectiveness in New Zealand public libraries. The first stage (Chapter Four) examined the views of key stakeholder groups to see what they considered to be the best statements to use for evaluating public library effectiveness. The use of correlation points to the closeness of views amongst all the key stakeholder groups. Based upon this information, the second stage asked only library staff to say how well they believed their library was performing on each of the key statements identified in stage one. This data was subjected to a factor analysis to 'spin out' clusters of statements which, this research claims, can be treated as 'dimensions' of larger groupings of statements of library effectiveness. This enables fewer measures to be used when evaluating a library, provided at least one measure from each key dimension is included in the evaluation. Chapters Six and Seven describe a project similar to that described in Chapters Four and Five, but this time conducted in New Zealand university libraries. Different stakeholder groups were used to

reflect the different communities a university library has compared to a public library. The results point to different views about what makes for an effective university library.

Part Three (Chapters Eight to Eleven) describes research into library service quality conducted in New Zealand in 1995-6 and 2004. It is based upon the SERVQUAL model developed in marketing by Parasuraman, Zeithaml and Berry (1985, 1988), and later adapted for the electronic environment by Parasuraman, Zeithaml and Malhotra (2004). As explained in Chapter Two, there have been at least two strands of development of SERVQUAL for libraries. This research is based upon the Hernon-Altman method (Hernon & Altman, 1996; Hernon, Nitecki, & Altman, 1999) rather than the LibQUAL+ approach (Thompson, Cook, & Heath, 2001). A full explanation of the theory used in this research has been provided in Chapter Eight. Chapters Nine and Ten describe research done in 1995 and 1996 in seven New Zealand university libraries. The intention was to understand the concept of service quality for academic libraries and then to create an instrument that library managers could use to measure service quality in their own libraries. Chapter Eleven is based upon research done some years later (2004) after the library environment had been changed significantly by the introduction of many electronic services. The intention was to adapt the instrument to see if it could still be used to measure service quality in the changed environment. This chapter describes the research done and the results that were achieved.

The last brief section contains the conclusion to the thesis and suggestions for further research into library evaluation methods (Chapter Twelve).

CHAPTER TWO

Looking for the Grail

The people charged with managing libraries have to perform a delicate balancing act. They must provide information products and services to customers, but do it on a constrained budget. The budget is important because a great deal of what librarians do requires expenditure, so the funding given to the library will enable or limit what can be done. The library manager is not completely helpless because he/she has some control on how the funds are spent and this gives the manager the ability to shift expenditure to the places it can be spent most advantageously. Utilising the library's resource inputs wisely means the funding can be optimised for maximum benefit. So the key problem the manager faces is how to know when resources are being used to greatest advantage. Unless this is known, the manager cannot be sure that the library's products and services are as good as they possibly can be.

A private company with a profit motive can judge its success relatively easily by looking at its profit and loss at the end of each month. By contrast, a library is a cost centre with no profit, so managers must use some other means of deciding how well it is performing. As will be explained later in this thesis (section 2.5.4) outcomes are not easily connected to what is done within the library and so, although some implicit benefits can be acknowledged, the direct appreciation of cause and effect is usually lacking. For example, a man borrows a library book on writing a curriculum vitae (CV), and after reading the book and changing his CV, he is offered a good job. His success can't be attributed with certainty to the library book because so many other factors would have to be taken into account. The man might attribute some of his success to his new CV, which in turn would owe something to the book, and at a further degree of remoteness to the library that lent him the book, but it could be that the mental connections he makes don't reach that far and hence the library receives no credit. So outcomes, which could to be the most likely way to assess a library's benefits, remain very difficult to measure. No truly accurate measure of a library's outcomes has yet been produced. With end results so hard to identify, other methods for evaluating library effectiveness have to be used because, as was explained in Chapter One, "even public sector institutions with seemingly intangible goals (like library services), need short-term, realizable objectives that can be measured, to aid them in evaluating the quality of the service" (Kinnell, 1995, p. 268). This chapter examines

different approaches to evaluating libraries that have been developed over the past forty years or so and a model is created to show the relationships between them

In the 20th century the general notion of the 'goodness' of libraries as a source of reading material for informal education and recreation was accepted by most funding agencies in New Zealand, and library managers were not required to make detailed justifications of the service. The budget might not be what the manager wanted, but at least it came without too many complications. This has changed, and though library 'goodness' might still be widely accepted, library managers today must justify budgets much more carefully than was the case three decades ago, and they need methods that enable them to do that. This leads to the need to find evaluation methods that show the efficiency, effectiveness, quality and value of the library to those to whom it matters. Evaluation is now firmly established as an activity essential for good library management.

The history of library evaluation is now quite a long one dating back to the early 1970s, yet little agreement has been reached on how best to evaluate a library. There is not even agreement of what different approaches have been developed for the purpose. In one attempt to categorise the different approaches, Herget and Hierl (2007) list six methods.

1. The resource approach (e.g. ratio of media per capita);
2. The input-output approach (measures of inputs and outputs, sometimes as ratios);
3. The provision of services approach (quality as perceived by the customer);
4. The strategic achievement approach (measuring how objectives are met);
5. The stakeholder approach (considers the expectations of all stakeholder groups);
6. The balanced scorecard approach (not truly a different method, but the balanced scorecard provides a management tool for measuring performance).

The second method on the list uses the traditional approach of counting inputs and outputs, described in section 2.2. Although they have not explained their first point in any detail, it could be interpreted as either a different form of input / output measurement, or an attempt to calculate value based upon the cost of inputs in relation to the benefits of the outputs. If it is interpreted as the latter, it is described in section 2.5. The service quality approach is clear and is the subject of section 2.4. The fourth point on the list is probably referring to concepts such as Total Quality Management (TQM) which is also described in section 2.4, although most management theory emphasises the importance of planning and setting objectives, so it is not immediately obvious if Herget and Hierl are referring to that, or to

TQM. The stakeholder approach is described in section 2.3, and the use of the balanced scorecard by libraries is described in section 2.6.

The list of six methods for evaluation given above is just one attempt to categorise the different ways it can be done. The point is not to dwell upon these six methods, but to emphasise the diversity of approaches that have been suggested in the past and make it plain that no one method has emerged as better than the others. If it had then there would be no need for debate about how best a library evaluation should be done. A modern library is a complex system, a point that will be emphasised in section 2.1, and that, perhaps, is the reason why several different methods of evaluation have been suggested, developed and used in practice. Each method has its merits but none alone has completely satisfied those who need the evaluations done. It seems that a modern library is rather like a large ball that rotates in front of our eyes. We can look at one part of the ball in great detail, but as soon as we have examined it carefully the ball has turned and we are confronted with a new part of the ball that we haven't seen before. It seems likely, then, that currently only a combination of evaluation methods really helps us to understand the goodness of the library.

The main purpose of this chapter is to integrate the methods of library evaluation and to create a matrix of methods based upon systems theory. In the process it will introduce the concepts of library effectiveness and service quality, and the argument is made that these are currently two of the most useful methods of evaluation for library managers. The measurement of efficiency is described but seen as too limited. It is certainly important for any library to be aware of its efficiency but as will be explained in section 2.2, this can be become too introspective with managers focussing internally at the expense of seeing the library in its social context. All libraries currently collect a range of efficiency data and should continue to do so, but reliance upon these as a measure of 'goodness' is short-sighted. The concept of value is explored in 2.5 but, as will be explained, it is too diffuse to be applied consistently to library evaluation. The calculation of cost-benefit, which initially appears convincing, is flawed and can only be used as a general means of evaluation. The most robust measures of goodness available at the moment are effectiveness and service quality, which is why the research described in this thesis has focussed on those two types of library evaluation. If managers understand library effectiveness and service quality and are given the tools to measure them, they should be in a strong position to argue the case for more resources.

2.1 The Open Systems Model

The 'systems approach' defines a system as a set of related and interdependent parts that form a unified whole. Societies are systems, so too are computers, motorcycles, and human bodies, to give but a few examples. Systems can be closed, with no interaction with the outside environment, or open, which recognises the dynamic interaction that takes place between the system and its environment. Open systems require feedback from the environment to know if they are successful, or if corrective action needs to be taken (Willett, 1992).

The application of systems thinking to organisations gained ground in the 1960s and it remains relevant today. The library as a system takes inputs in the form of human resources, capital, technology and raw information, then processes and transforms the resources by the application of labour, management, and operations, and outputs the result as products or services If the system does this well it will have added value to the resources. Outputs can take many forms such as physical objects, trained personnel, information and advice, or just a public space. The purpose of the outputs is to satisfy demand from the environment. Feedback to the system comes from numerous sources. Manufacturing firms in the private sector will have immediate feedback in the form of success or failure at the sales counter. If firms have converted inputs into products or services that consumers want to purchase at a price that covers the company's costs, then the firm will receive positive feedback through higher sales. A lack of sales suggests either that the product is not wanted at all, or not wanted at the chosen price. For a service organisation the feedback is less obvious but it does exist: lower usage rates, inappropriate use of resources, or complaints, are all signs that the organisation should notice. Any system that ignores feedback from the environment risks failure for a number of reasons: the selection of inappropriate or expensive inputs that do not convert into useful outputs; processing or management that changes the resources yet fails to add value; the production of unwanted products or services that do not sell in sufficient quantities. The interaction between all the parts of the system is immediate in the light of direct feedback, but service providers are different because the feedback is delayed and less obvious.

The discussion of systems theory has suggested that there are three major categories of activities that can be evaluated in any organisation:

1. Inputs
2. Processes
3. Outputs

The fourth category is that of outcomes. General systems theory can be applied to service industries and to the public sector, but when used in the service sector the feedback from the environment is not as clear-cut as it is in manufacturing, and this is because there is often no direct connection between inputs, processes, outputs, and outcomes. A university takes new students into its undergraduate programmes and it uses numerous inputs to 'process' the raw material into the final output of an educated graduate. The feedback from the environment is not immediate, however, and the university (as a system) cannot always tell if its outputs are in demand or not. That a graduate finds employment – an outcome - is an indirect guide but no more than that. Other outcomes could be greater creativity, social awareness, or athletic ability. A problem with using outcomes in evaluation lies in the nature and quality of the feedback from the environment. For a library the connection between its activities and the feedback from the environment is hard to discern, so if the previous example is taken further, the university finds it hard to make a clear connection of cause and effect between a graduate finding employment and the learning the student did, so the university library only constitutes a part of that learning and there is no clear, easily identifiable, effect. Open system theory gives some help. The open system theory of organisations posits that it is the relevant 'task environment' that matters (Thompson, 1967). An organisation must stake out its territory, or domain, in terms of its products or services, its methods of delivery, and the population served. The task environment consists of customers, suppliers, competitors, and regulatory groups within the domain. By analysing the task environment of the library and then evaluating what it does to deliver products and services, it is possible to explain some of the library's contribution to overall organisational outcomes.

So, the library system can be divided into four parts for the purpose of evaluation: its inputs, outputs, processes, and outcomes. The only variation of these categories and those established by an analysis of open systems thinking is the last category because in open systems theory the fourth category of outcomes may be called feedback. In the research on performance measurement and organisational effectiveness described in Chapters Three to Seven, the fourth category is stakeholder responses. The difference between feedback and stakeholder responses is quite small. Because the last category of

outcomes/feedback/stakeholder responses is the most complex, and has been the most keenly debated over the last decade, it is worth spending some time taking a look at what has been said about this category, but first the other three categories will be examined in section 2.2.

2.1.1 The viewpoint of the observer

Orr (1973) made a distinction between how good the library *is* and how much good the library *does*. His two criteria are Quality and Value. Orr said Quality could be explained as having staff who could answer questions accurately (how good the library *is*) and Value as being the effect on society of correct answers being put to use by the library's customers. This can be seen to be similar to the two pronged approach of open systems theory, for first he described the control environment, and second the user environment. Orr deliberately rejected the terms 'effectiveness' and 'benefit' for his two concepts, but those two words are much more closely aligned to the arguments presented in this thesis. Orr was in advance of other writers because his concept of quality was not passive, represented only by inputs and resources. Instead it required some activity on the part of staff to convert the resources into activities, and it was the nature of those activities that could make the supply side of the equation better or worse, which introduces some aspects of library effectiveness into the mix. Orr's use of these terms is not in accordance with later writers and in this thesis quality and value are not defined in the same way as Orr. Though he was implicitly introducing the user environment in his phrase "How much good does it *do*?" (Orr, 1973, p. 317) – for this is about the use of information provided to the customer by the library system – he was not employing a 'user' perspective here, which can be shown by his phrase "The ultimate criterion for assessing the quality of a service is its capability for meeting the user needs it is intended to serve, and that the value of a service must ultimately be judged in terms of the beneficial effects accruing from its use *as viewed by* those who sustain the costs" [my italics] (Orr, 1973, p. 318). So although he was taking an outward view unusual at the time, he stopped short of adopting a genuinely external (customer) perspective, leaving the judgement of benefits and values to those who fund the service. Orr's prescient thinking establishes two elements to library evaluation that will be used extensively in this chapter, namely, the internal view of the system itself and how good it is, and the view of the use made of the system by its customers. In this meta-evaluation of library evaluation, two cells of a four cell matrix have been identified: the *x* axis of the internal view, with one cell the library system and the other being its use.

2.1.2 Loose coupling

Many public sector libraries have an organisational split between the providers of inputs and users of outputs (Buckland, 1988) and this means the library is 'loosely coupled' with the environment, as predicted by open systems theory. For example a library will purchase books, journals, audiovisual and electronic materials for its collection. These are system inputs, as are the employment of qualified staff and the use of a building. Materials are usually processed, enhanced by the addition of bibliographic information, and then stored for retrieval. However, the outputs from the system are not 'processed books'. The outputs occur when library customers use the materials, but the uses they put them to are diverse and unpredictable. It becomes very hard, perhaps impossible, to say exactly what the outputs are. Armstrong (1968) recognised that libraries had 'products' but he said that the ultimate product of the library is intangible. Sometimes a customer will ask library staff to assist with the discovery of information, and in this case the reference answer is an output of sorts, but it is still not possible to know if the information was what the customer actually desired or needed, or whether the information solved a problem.

Libraries as organisations generally formalise input processing and customer service into two separate divisions within the organisational structure, typically called Technical Services and Public Services. Possibly Technical Services staff believe that the acquisition and cataloguing are their only roles within the system, and that subsequent customer use of the processed materials is not their concern. As a result of this separation of functions, evaluation of one function will not necessarily reveal meaningful information about other functions within the library. An evaluation of the cataloguing process could reveal much about the efficiency of the process but nothing at all about whether or not the catalogue made it easier for customers to find needed information. This is what Buckland meant by 'loosely coupled' (1983). Systems theory says that the complexity of most organisations makes it impossible to see a direct connection between the activities of one part of the system with a failure occurring in a different part of the system. The apparent discontinuity between elements of the library makes almost any sort of evaluation a matter of trying to tie together separate elements of the library, and this is why the balanced scorecard method described in section 2.6 has some appeal. Simply, there are so many disparate elements to a library that no single measure truly represents the goodness of the library, and only a collection of different measures will give managers sufficient evidence to assess whether or not the library is doing well and making good use of its resources.

2.1.3 Controlling the environment

The organisation (represented by its managers) prefers stability and does not like external change (Katz & Kahn, 1978). The organisation adapts to external changes when it is necessary. If it can't adapt to the environment, then it can try to change the environment (which helps to maintain predictability). Many librarians do this instinctively by trying to capture public opinion, especially if threatened with significant change such as the closure of a library branch. They will also try to build up reserves of resources to survive downturns, which is one reason collection building goes on every year while funds allow. Organisations such as libraries can take advantage of parent organisations to benefit from their stronger control mechanisms, for example, university libraries benefit from funding given to the whole university, and public libraries benefit from positive social values held by the community. All of these activities are designed to buffer the organisation (in this case, the library) from external influences that result in change. Some attempts to control the environment are made through cooperation. Several New Zealand libraries have chosen to join consortia, often sharing risks inherent in the environment (e.g. Fordyce, 2004), though they rarely use other methods of controlling the environment.

If the library cannot change the environment then it can modify itself internally to meet the needs of its environment. Lynch (1974) reviewed internal changes in academic libraries in response to external pressures. Shoham (1985) wrote on adaptive responses in public libraries to reduced funds and changing populations. When budgets have been cut, library managers usually try to restore funding as soon as possible, and only if that has failed are internal adjustments made.

This makes for a two-environment model – the control environment and the user environment. The organisation will generally use feedback from the user environment, though it is scattered and weak, in most forms of library evaluation, and yet the library will also try to influence the control environment to provide resources *independently* of customer satisfaction, such as the development of digital libraries for long-term preservation purpose (e.g. Sun U of Alberta Libraries, 2008). Some library managers use a mix of strategies. They may try to control the environment by using long-term strategies such as getting in on the ground-floor of institutional repository development (e.g. Jantz & Wilson, 2008) or building research collections or digital libraries that may not be used much in the short-term but yet store value for the longer term, and sometimes they respond to the user environment in an immediate (short-term) way, e.g. by using new book displays

to promote use. This internal view of the library and its purpose can be hard to evaluate because it is often so long-term as to defy simple measurement. As a very simple example, a book purchased now may not be read for ten years or more, but when it finally is used the benefits that it gives could be great. This point is central to many arguments put forward about a library's 'value'. Library activities may have no immediate benefit but rather are intended to develop and preserve the library and its collection. Two significant environments are detected: a control environment (internal processes) and a user environment (external or customer service). This gives the y axis of the matrix being developed in this meta-evaluation. The y axis is in two parts, the internal and external views.

2.1.4 Summary of open systems model

In summary the application of the open systems model to libraries has led, logically, to an understanding that libraries are diverse organisations that cannot be explained in one dimension. Activities or operations in one part of the library may be only 'loosely coupled' with what occurs in a different part of the same library, and this means that measurements made of selected activities will not *necessarily* predict what is happening elsewhere in the same organisation. Loose-coupling inevitably affects the processes that libraries use to evaluate their performance. There is no bottom-line of profit or loss providing feedback on the organisations ability to meet the environment's expectations. The matrix has been developed reflecting systems theory in two ways, Orr's division into the library system and the use it is put to is the *x* axis, and the control of the system reflected in an internal and an external view is the *y* axis. This matrix will be further developed in sections 2.2 – 2.5. More detail will be provided, as will examples of how each part of the matrix can best be used to evaluate a library.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal		
	External		

2.2 Traditional Input, Output, and Process Measures

Chapter One gave a general description of measurement and measures. This chapter reviews the nature of measures used in libraries, and will critique their value in assessing the goodness of the library. Common performance measures used in libraries include input, output and process measures. Though generally used to measure efficiency, if used to measure "how well the library is doing what it claims to be doing", inputs, outputs, and processes can be measured to assess the extent, efficiency, and even the effectiveness of library programmes.

2.2.1 Input measures

Input measures count the resources put into the organisation. Using the list of questions posed in Chapter One, input measures usually ask the questions 'how much' and 'how many' and have an internal focus. Many different aspects of library operations can be counted and called an input measure and there is no agreed classification of inputs. Matthews (2004) has listed five types and they will serve here.

- Income and expenditures
- Staff
- Collection
- Library information system
- Space

For most libraries the simplest and most important input measure is the amount of money it is granted by its primary funding agency, e.g. the local government authority, the university, government department, or firm. Library managers like a large budget because it is usually associated with success; that is, a successful library will be rewarded with more money. This argument is circular, of course, for money is essential before a library can perform, and a library manager with no funds for disposal will find it difficult (though not impossible) to run the library. An indicator of this might be "budget expenditure per capita". Other inputs commonly measured are staff numbers, collection size, physical facilities (building space), and, more recently, the number of workstations provided for public use (which Matthews included in the category 'library information system'). Staff, collection materials, and equipment are bought with money from the budget and are considered as inputs. Year on year figures, such as the growth in the collection, equipment, and staff numbers, might be considered good signs and are usually touted by library managers as such.

In practice the major use of input measures is to report back to the funding agency on how the budget was spent. Library managers will usually compare input data with the unspoken yet clearly understood message that if one library has a larger budget, more staff, and a larger collection than another, it is a 'better' library. The comparison of the library's inputs and outputs initially against a standard and thereafter against peer libraries is usually called performance benchmarking (Powell, 2006, p. 109). The Standards for College Libraries (American Library Association, 2000) confirm the practice and suggest that a library could also compare with 'aspiration peers', that is, libraries currently ahead in the inputs league. Performance benchmarking is well entrenched in library practice: "In practice, comparisons of library service have been used extensively to show deficiencies in library service individually or collectively and consequently to justify a need for greater financial support" (De Prospo, Altman, & Beasley, 1973, p. 17). At the least, comparison with other libraries gives some context for input measures which they do not otherwise have. The same authors go on "Implicit in this use, also, is that numerical quantities bear some relationship to actual performance or effectiveness. Larger quantities in almost all areas of service have commonly been presumed to mean better service" (p. 17). The problem, of course, is that input measures say nothing directly about the 'goodness' or effectiveness of the library and it can only be, as these writers say, an implicit relationship. Gathering data on inputs is something that library managers have always done, and it could be that it has more to do with gaining control over the environment (see section 2.1.3) than consciously trying to improve the effectiveness of the library.

2.2.2 Output measures

An output is the end result of a service. A slightly more precise definition is 'any client exposure to the service' (Blagden & Harrington, 1990, p. 2). Outputs are the uses to which the library is put by its customers, such as getting answers to reference questions, using online databases, borrowing books, and using a study space.

Output measures have been described as the 'first wave' of studies into the value or worth of libraries (Missingham, 2005) and they commonly ask questions such as 'how fast', 'how much more do we need' and 'how many'? Again, the view is an internal one, despite the actual consumption of a service by an end-user. "Output measures reflect an inward orientation in that they measure how much the library is used. However, there is no clear innate or implied value in activity *per se* without context" (Matthews, 2004, p. 86).

There is no qualitative judgement placed on outputs, only quantitative. In contrast to input measures, output measures are sometimes considered direct indicators of library performance (Powell, 2006, p. 106). A measure such as "the number of items issued in the year" is an exact count of one library activity and so has some validity as a service indicator. Circulation counts have been used as an output measure since libraries were first built and seem to have a great attraction for library managers, to the extent that the Hennen American Public Library Rating system (HAPLR) factors circulation counts into the index at least six times (cost per circulation, collection turnover, circulation per FTE hour, circulation per capita, circulation per hour, circulation per visit) (Hennen, 2002). This, despite user studies suggesting that the socioeconomic level of the local community makes a greater impact on library use than does the library's own activity (Ballard, 1989). One result of the emphasis on circulation as an output measure is described thus: "The continuing emphasis on raising the levels of book issues leads to a culture where libraries become identikits of each other, with shelves full of populist material, with little room for diversity, and more importantly the non-fiction and reference areas being squeezed to accommodate more paperback novels" (McMenemy, 2007, p. 275). In such a library the circulation count is probably high, but one can ask if this library is having much beneficial effect on the community? This is an illustration of the narrowness of output measures; no library should depend on just output measures for evaluation.

Output measures can be applied to a wide variety of library services, which is an advantage they have over input measures. Matthews lists five categories of output measures (2002, pp. 56-57):

- services
- quality
- collection use
- online catalogue/portal use
- building activity

Service output measures are often calculated on a per capita basis to allow for inter-organisation comparisons, and they might cover (for example) the number of inter-library loans and the number of reference questions answered; the key point being that there must be a service element in the activity. A definition of quality will be attempted in section 2.4 and methods for its measurement suggested. Collection use is different to service because

it can be a result of customer self-service. Customer use of the catalogue is a measure of how much the library's chief finding-aid is being used, though it does not tell us how easy it is to use or how much it assisted customers find the information they wanted. Building activity is also a measure of customer use of library resources. Door counts, the numbers of people at study desks, and even the numbers who stop to look at items on display are all measures of building activity, though there is no immediate connection between use and final outcomes. Yet output measures retain their popularity with library managers for at least two reasons. First, they are easy to collect – some are even automatically generated by internal computer systems, and second they reveal useful information about library efficiency; that is, the library's capacity to use efficiently its human and material resources. This latter information is something that funding agencies always want to know.

Even in trying to find measures to assess the impact of electronic services and other relatively new forms of service delivery, the chosen starting place is usage statistics (i.e. outputs). The reasons for collecting and analysing them in the United Kingdom given by Conyers (2006) are revealing:

- Because they're there;
- Because SCONUL has asked for them;[1]
- To help the library with promotion and user support;
- For budgeting and decision making;
- To aid bench-marking.

So, output measures retain their position as perhaps the most frequently used form of performance measure in all types of library because they are easy to collect, easy to understand, and they offer some insight into library efficiency and effectiveness. Studies have shown, however, that outputs are not a reliable measure of library effectiveness. A comparison between input and output measures of 24 large public library systems in the United States of America found that none of the 24 libraries was in the top quartile for the selected output measures and that there was, significantly, no correlation between inputs and outputs or between expenditures and performance (Altman & Pratt, 1997). "This lack of causality would appear to make it more difficult to suggest a correlation between output measures and library effectiveness" (Matthews, 2004, p. 88).

[1] The Society of College, National and University Libraries.

2.2.3 Process measures

Converting inputs into outputs depends upon processes, and these processes can be measured, albeit not precisely. Process measures deal with questions such as 'how economic' and 'how well organised'? They can help answer the question "Are we doing this right?" The sorts of library processes that can be examined and measured are varied, including activities such as shelf reading accuracy, dealing with simple directional questions, adding bibliographical records, converting documents to digital formats, and providing reference assistance. Many process measures will involve library staff, but not all because aspects of system performance can be considered as process, for example server downtime (Matthews, 2002, p. 46). Matthews identifies three categories of process measurement (2002, p. 46):

- efficiency
- staff productivity
- library information system activity

If the organisation starts from the assumption that what it is doing is what it should be doing then it only needs to ascertain that it is doing it as efficiently as it can. Process measures tell us not only how efficient we are but how inefficient we are. If it is converting inputs into outputs wanted by its customers then the organisation is showing its goodness. Many managers have worked on the assumption that they know what the library should be doing and so only need sufficient inputs to be able to do what the library needs to do. The flaw in this argument lies in the inability of an organisation to be certain that it is doing what it should be doing. (If it were that simple there would be no search for library evaluation methods other than inputs and outputs.) Many activities in the library are so fundamental that they scarcely need justifying, but evaluating them for their efficiency is good management practice. An example would be testing the creation of bibliographic records for the catalogue. Is it cheaper to purchase records from a bibliographic agency such as OCLC[2], or can records of a satisfactory quality be created in-house, and if so, can this process be done more cheaply in-house? First the library needs to compare costs of purchasing records from OCLC in relation to creating records in-house. It then needs to ensure the in-house records are of a sufficient quality – but not necessarily the *same* quality – as the OCLC records. If the latter is confirmed then it is only the costs (in dollars and time) of the records that matter for assessing the efficiency of the process.

[2] Online Computer Library Center

If the internal records are significantly better or worse than the OCLC records then the calculation needs to take that into account, but it is still a relatively simple sum.

In Matthews' list of categories the use of 'efficiency' seems similar to the second category of staff productivity, though the emphasis in the second one is on the staff's activities rather than on the process. Measuring staff productivity could be directed at determining whether or not the staff need further training.

A common evaluation method is process benchmarking (not performance benchmarking, described in section 2.2.1). Generally an organisation benchmarks a process with a similar organisation or an organisation that performs similar activities, and then compares itself with the other organisation. This might be a library comparing itself to another library, but it is equally valid for a library to compare some of its activities with, for example, a supermarket. The purpose is to discover if there are better ways of performing the activity and then implementing changes to make the organisation more efficient. For example, by comparing a library with a supermarket, a manager can see if the circulation process was managed as well as the checkout counters in the supermarket, examining such aspects as queuing times for customers, and non-productive time for staff when there are no customers to serve. An example of benchmarking a process is an Australian national benchmarking study of the inter-library loan function (National Resource Sharing Working Group, 2002). Once libraries have commenced benchmarking they often continue with the activity for ongoing comparisons of improved processes and reduced costs.

2.2.4 Sets of performance measures

There have been several sets of library performance measures published in the last four decades. None of them has gained universal acceptance. This section will list some of the prominent sets of performance measures, and then analyse five major problems with sets of performance measures that have inhibited their wider acceptance.

Many library inputs and outputs can be counted easily and this makes their measurement attractive to library managers. Also, it is usually easy to comprehend what measures of inputs and outputs represent. Lists of performance measures created in the 1980s and early 1990s were mostly composed of input and output measures. In most libraries the measures were used only to provide some data to funding agencies, and as many library managers like to include comparisons with peer libraries in their annual reports, using simple

measures that were also used by similar libraries made that reporting easy. What could be said of many early attempts at collecting measures of library performance is that (a) the indicator used was based on the perception of the provider, not of the customer, (b) that the measures were of phenomena, e.g. how many books are checked out, and (c) that often the data went nowhere, or at best ended up in annual reports.

The first major attempt at a consolidated list was the overall set of performance measures for public libraries of the Public Libraries Association (De Prospo, Altman, & Beasley, 1973). The work of the PLA had a major impact on the wider acceptability of performance measures in libraries, although in practical terms the data collection procedures outlined in the 1973 publication were not widely adopted. At the same time, some practitioners were trying to come to grips with the concept of library 'effectiveness' and were beginning to identify effectiveness with the achievement of appropriately targeted service-oriented goals and objectives (e.g., Hamburg, Clelland, Brimmer, Ramist, & Whitfield, 1974).

The most significant contribution of early attempts to evaluate library performance was that they changed the generally accepted understanding of library effectiveness from a preoccupation with easily quantified resource-based inputs (budgets, collection size, staff levels) to service outputs (collection use, user satisfaction, response times) even though there was little agreement on what were the most important elements to measure, nor how intangibles should be quantified for reporting purposes. The most notable evidence of this in the 1980s and early 1990s was the publication of the American Library Association's *Output Measures for Public Libraries* (Zweizig & Rodger, 1982); a revised and improved set of output measures for public libraries (Van House, McClure, Zweizig, & Rodger, 1987); and the work of King Research Ltd for the Office of Arts and Libraries (Great Britain) (*Keys to success*, 1990), yet even these works, based on over twenty years of research and analysis, were not adopted by practitioners as widely as the authors and publishers had hoped. One reason for this was that the measures did not address the underlying conceptual problem, which is discussed in Chapter Three. Practitioners preferred to retain traditional counts, usually of simple inputs and outputs, which were largely unrelated to the library's organisational goals and objectives. Unesco produced a document intended to set an international standard for measuring the performance of public libraries (Moore, 1989). Specific aspects of public library service have had lists of measures created for them (e.g. Walter, 1995). Lists of measures followed for academic and research libraries combined (Kantor, 1984) and for academic libraries alone (Van

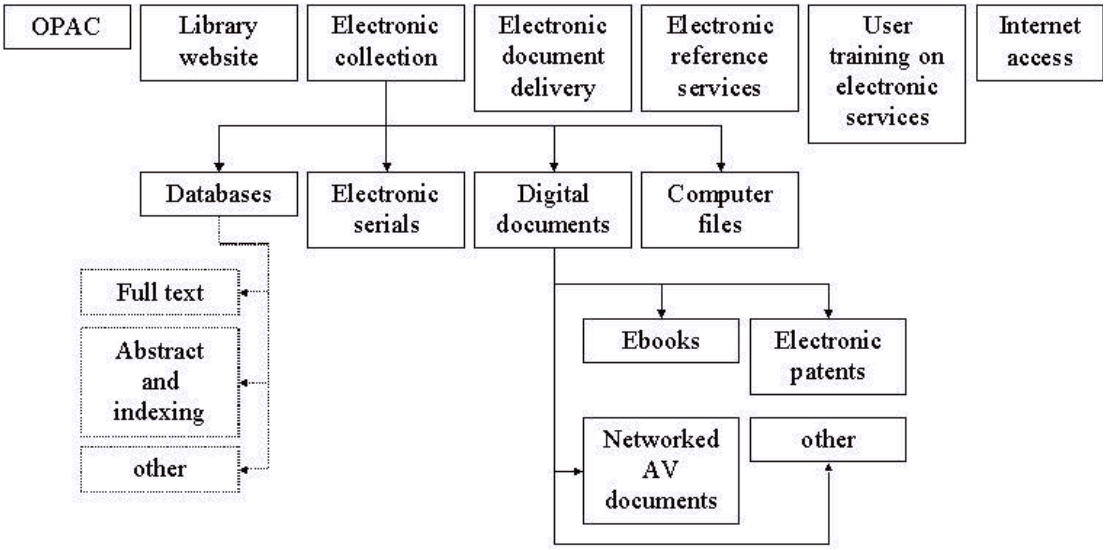
House, Weil, & McClure, 1990). These lists served a useful purpose in encouraging library managers to use performance measures and test them for their utility. Because several libraries used the lists and compared results there was some collective awareness developing at that time of the benefits and weaknesses of input and output measures. It led to a greater interest in measurement and evaluation, and more research and publication. In 1995 the first Northumbria International Conference on Performance Measurement in Libraries and Information Services was held in a series which has now become a meeting place for researchers from around the world. A general set of measures was developed for Europe (Centre for Research in Library and Information Management, 1996), though it included mostly familiar input and output measures with some measures of cost added. An international standard was approved and later revised by the International Standards Organization (ISO, 1998) which was almost entirely composed of familiar input and output measures, with no measures for cost-effectiveness, and only two simple indicators for electronic library services. Although there is now considerable international interest in developing performance measures for libraries, and there have been some fairly widely accepted standards produced to that effect, most sets of measures have shown little development since the 1970s. Lists, it can be said in their favour, increase the commonality of method amongst libraries.

What is not entirely surprising, and indeed disappointing, is that when library managers needed new measures to evaluate the electronic technologies that started to enter libraries in the mid-1990s, the response was usually a list of measures that were relatively easy to collect, but were limited to input and outputs. Perhaps the first of these was the *Guidelines for statistical measures of usage of Web-based indexed, abstracted, and full-text resources* (ICOLC, 1998). The measures it proposed libraries use for assessing their digital resources were largely for input and output data, e.g. the number of logins, the number of queries, the number of menu selections, and the number of turn-aways. Some of these, e.g. the number of turn-aways, assess elements of service conformance, yet they are basically counts of usage. The Association of Research Libraries produced its own set of measures (2001) with primary data elements analogous to the ICOLC guidelines.

The EQUINOX Project (2002) stated as one of its objectives "To develop a standard set of performance indicators for the hybrid library and to move towards international agreement on this set". The project created a list of fourteen performance indicators, and these are nearly all output measures. Only the last indicator varies from the others in that regard.

1. Percentage of the population reached by electronic library services
2. Number of sessions on each electronic library service per member of the target population
3. Number of remote sessions on electronic library services per member of the population to be served
4. Number of documents and entries (records) viewed per session for each electronic library service
5. Cost per session for each electronic library service
6. Cost per document or entry (record) viewed for each electronic library service
7. Percentage of information requests submitted electronically
8. Library computer workstation use rate
9. Number of library computer workstation hours available per member of the population to be served
10. Rejected sessions as a percentage of total attempted sessions
11. Percentage of total acquisitions expenditure spent on acquisition of electronic library services
12. Number of attendances at formal electronic library service training lessons per member of the population to be served
13. Library staff developing, managing and providing ELS and user training as a percentage of total library staff
14. User satisfaction with electronic library services

The most recent international sets of performance measures are published by the International Standards Organization. The first, *Information and documentation: international library statistics: ISO 2789: 2006* (ISO, 2006) is almost a taxonomy of terms used in libraries (Renard, 2007). To improve comprehension of how electronic services could be classified and measured the standard includes a diagram showing how they are related.



(ISO 2789, 2006, Annex A)

The second recent ISO standard is *Information and documentation: library performance indicators: ISO 11620: 2008* (ISO, 2008). This includes a fairly limited set of 45 indicators that can be used to assess a library, with some being added for measuring the digital library.

The plethora of guidelines, manuals, and standards, all claiming to have the definitive set of performance measures for libraries, has singularly failed to deliver a single set of measures acceptable to all library managers. This may be because they contain four problems inherent within them. First, there are large discrepancies between the sets of measures. They assess many different aspects of the library service at varying levels of depth with no clear key 'dimensions of service' being established; and they set different levels of achievement, so what is acceptable with one standard is not enough in another. Second, there are numerous indicators to choose from, with no agreement on which are the most important indicators. One assessment of seven sets of library performance measures concluded that around 200 different indicators could be counted, with only three common to all seven approaches (Herget & Hierl, 2007). Third, there are major variations between the methodological approaches used, e.g. some are quantitative, some qualitative, and some use grounded theory. Fourth, the performance measures are rarely linked to what management needs to know: what has caused a problem, how can it be fixed, and when will the organisation know it is fixed? Fifth, performance measures are proxies of the service but become the focus in some cases, and when excessive emphasis is placed on 'hitting targets', the actual operation of a service may become badly distorted (Matthews,

2004, p. 19). Thus it can be concluded that output measures alone are not an adequate form of library evaluation, yet they are measured and will continue to be measured by librarians around the world. This suggests that if they could be incorporated within other forms of library evaluation, they could serve a useful purpose, and that is what is proposed in sections 2.3 to 2.6.

2.2.5 Summary of traditional input, output and process measures

Input, output, and process measures used to evaluate a library come from an internal perspective. The perspective of the end-user is not seen in these measures, unless people using a service are counted as recipients of the service, rather than as customers gaining benefits from it. The purpose of collecting these measures is the improvement of internal operations, and reporting to external agencies on internal actions. This type of evaluation is still important, but it represents only a part of the whole and so, used alone, input, output and process measures are insufficient for evaluating a library.

The first cell in the matrix is the internal view of the library. Here the inputs, outputs and processes are measured by the library so that it can understand its own workings with the objective of becoming more efficient.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal	Resource use Procedures	
	External		

2.3 Multiple Perspectives on Effectiveness

Library effectiveness has generally been assessed by traditional measures, such as circulation counts. In reality such measures can only *imply* effectiveness or quality because they do not reflect the human dimension in the transaction. Whereas traditional performance measures of input, output and process collectively answer questions about the efficiency of internal operations of the organisation such as ‘how much’, ‘how many’, ‘how economic’, ‘how well organised’, ‘how fast’, ‘how much more do we need’, and

'how many'?; when evaluating effectiveness the questions change and must instead provide answers to 'are we meeting organisational goals', 'how appropriate', 'what is most important', 'how well', 'are we doing it right', and 'are the customers satisfied'? These questions look outward to the customers and other stakeholder groups.

An early attempt at defining library effectiveness was the Hillingdon model described by Bird (1981). This was based upon the assumption that the library system had two distinct elements, one being the library system and the other being the customers. In this view the library took inputs and used internal processes to convert them to outputs such as book circulation and reference interviews. The end-users had needs for information that were a necessary preliminary to them meeting their goals, which might be passing an examination or setting up a small business. In this model effectiveness was defined as the ability of the library to convert inputs into desirable outputs that closely met the customers' needs. Although this model recognised a division between the library system and its customers, it was still quite close to a general systems model in that no account was taken of the needs of the providers (i.e. library staff), or other groups such as funders, policy makers, and suppliers. The only measurable aspect in it was how well end-user needs are satisfied (similar to Orr, 1973; Vickery, 1973), but this was done without reference to quality or outcomes. In other words, if a customer wanted a particular journal article and it was subsequently delivered to that customer, then that is a mark of success for the system no matter whether the customer actually read the article and changed behaviour as a result. Hillingdon's model was based upon input, output and process measures, but the key element in this view was the ability of the library to meet customer needs. These were not defined as outcomes and the measure of whether customer needs were being met or not was left to the library system. It did this through its conventional planning methods of setting a vision, setting objectives, and then using all its resources to achieve its objectives. If objectives are written so that they include a measurement, and Schauer (1986) argues that libraries must set goals that are observable and measurable, then managers can decide if they have achieved the goals that have been set. Whether or not the library achieved its goals was the measure of effectiveness (e.g. Vickery, 1973). This definition stands as the basis for further review of evaluating library effectiveness.

The measurement of effectiveness through meeting objectives was set out as a seven stage process by the American Council for Research Libraries, and it was circular in nature (Van House, Weil, & McClure, 1990). It consisted of:

1. Deciding upon the basis for the evaluation (generally, this means meeting objectives);
2. Defining the library goals as the desired state of what will be assessed in the evaluation;
3. Designing criteria that represent indicators of effectiveness;
4. Organising library activities in such a way that the goals are realised in the best way;
5. Gathering data on each chosen measure;
6. Comparing the gathered data with the goals set and assessing how effective the library has been in their realisation;
7. Assessing the adequacy of the defined criteria of effectiveness.

Setting goals for the organisation and measuring goals is still not sufficient. Effectiveness is about doing what the organisation should be doing, and doing it well. Lynch (1983), in a definition crucial to the study of library effectiveness, defined performance as "the doing of something, an activity" and effectiveness as "something which does well that which it is supposed to do". The crucial difference between the two is that performance can be the doing of an activity in an abstract environment while effectiveness clearly relies upon the activity having a social context. There can be no effectiveness in a vacuum where nothing has a purpose. It is this social context that is important. A library has to have a social context or it has no purpose whatsoever; there can be no library if there is no community to use it. Pursuing this theme further, it is the library's total community that has expectations of what it is the library should be doing, and that same community will also demand that the library does it well. Ignoring the role of the external community in determining library effectiveness puts the library into a vacuum. Using the social context allows each library to adopt a contingency approach because each library organisation can look at its own capacity to respond to its own unique situational and environmental constraints. No library is forced to attain goals set by another library that serves a different community.

Cameron (1978, 1981) extended Lynch's point with his argument that the measurement of organisational effectiveness depended upon multidimensional methods of assessment and could not simply be judged by the organisation's staff. By implication he was saying that other groups had to be involved in determining what the organisation should be trying to achieve. He also said effectiveness is a mental construct and so not directly measurable, especially when the organisation is operating in the political environment. This reinforced

the view that inputs alone were an inadequate way to judge a library and that trying to assess outcomes was unlikely to work, either, even though output measurement was an improvement on what had been done before. He argued that the nature of a library service (especially in the public sector) has a broadly aimed social programme that is best judged by gathering political responses to the library's performance. The library's activities are, in effect, political acts and are best judged that way.

Cameron (1978) talked of effectiveness as 'successful organisational transaction' which means that the organisation must itself be satisfied with what it is doing. He also talked of the organisation trying to achieve 'valued outcomes', i.e. those outcomes that are valued by the external environment. In effect Cameron was summarising and synthesising previous methods suggested for evaluating organisational effectiveness. He drew four of them together and suggested that they covered all the essential elements needed for a thorough assessment.

2.3.1 Methods of gauging organisational effectiveness

1. **Goal Attainment model**. In this method the focus is on goal attainment, which is achieved through productivity and outputs. This method is shown clearly in *Output measures for public libraries* (Van House, McClure, Zweizig, & Rodger, 1987) and *Planning for results* (Himmel & Wilson, 1998).
2. **Internal Processes model**. This puts the emphasis on having efficient internal processes that are good for the maintenance of the social unit. There is an element of achieving goals in this method, though largely what is sought is how the processes work to achieve those goals. One phrase used frequently in association with this method is 'organisational health', which is measured by the organisation's stability and efficiency.
3. **External Systems model**. This method posits that because the organisation is dependant upon the external environment for resources then it is the organisation's success in acquiring resources (inputs) that is the measure of its effectiveness. It is very much in line with much traditional library thinking about the importance of inputs as a measure of success.
4. **Multiple Constituencies model**. This model views effectiveness as the degree to which the expectations of stakeholder groups are met. It is they who determine what it is that the library should be doing. The library's success in meeting those

expectations is the measure of its effectiveness. The challenge in this model is the differences between what is expected by each of the stakeholder groups.

It can readily be seen that the first three models in the list reflect traditional thinking about evaluation. The third on the list, the External Systems model, sometimes called the System Resource model, places its focus on the gathering of resources, or inputs. The first on the list, the Goal Attainment model, introduces the importance of goal setting, but the method of evaluating the success of goal attainment is usually through measuring outputs. Second on the list, the Internal Processes model, sometimes called the Natural Systems model, focuses on the efficiency or 'health' of processes within the organisation. Thus all three emerge from systems thinking (section 2.1). The fourth method on the list, the Multiple Constituencies, or Participant Satisfaction model, introduces something new in the form of external groups contributing their views on what it is the library should be doing. The external view is still of the system but the perspective changes. The external groups do not necessarily take part in the measurement of success, they only say what the library should be doing if it is to be effective, and then the library will evaluate if it is meeting those expectations (Cameron, 1978, 1981). After gathering the views of stakeholders about what they expect the library to be doing, the onus for setting objectives and how those objectives are measured returns to the internal system. The Strategic Constituencies model has been used extensively in this research and is at the core of Part One (Chapters Three to Seven).

2.3.2 The stakeholder groups

This method calls upon key stakeholder groups to contribute their views on what it is the library should be doing. First, a key internal stakeholder group is the organisation's staff, as this group is commonly involved in setting the organisational objectives and assessing whether or not those objectives have been met, including whether or not customers were satisfied. Yet only a minority of staff have the power to determine policy so when selecting stakeholder groups it is best to divide library personnel into the senior staff who are in a position to affect strategic planning, and those staff who are not. Bird (1981, p. 9) called these stakeholder groups 'staff' and 'managers'. Second, there will be a stakeholder group that determines the budget. In New Zealand public libraries the financial allocation is set by the local government authority. Third are the external customers; that is, the people that use the library. This is contentious because many librarians would like to include all customers as well; Bird (1981) listed clients and potential clients as two separate stakeholder groups. In Chapter Four a more detailed explanation is provided for the

definition of a stakeholder as used in this research. In the Multiple Constituencies model used in Chapters Four to Seven, the definition of a stakeholder is someone with a degree of ownership in the organisation. Active customers have ownership because they use the products and services provided by the library and so can comment on the service they receive. Those who are not active customers cannot be expected to have sufficient awareness of products and services to be able to comment on the effectiveness of the library, which is an evaluation of what the library is doing. Yet they are still customers, and are treated as such in the research described in Part Two (Chapters Eight to Eleven) on measuring service quality in libraries. There is a difference in how passive customers are used in the two forms of evaluation described in the two major parts of this thesis, but this is not contradictory. This thesis is evaluating different methods of measuring the goodness of a library and it is within expectations that some of the definitions used in the different methods will vary. In a public library there may be no need to separate customers into separate groups, but in an academic library it would be common to say that academics have different expectations for the library than students. Even amongst students the postgraduate students need more materials for research than do undergraduate students, amongst whom access to the recommended texts is likely to be a key demand (but these are assumptions; the stakeholders have to be asked what it is they expect from the library). Other possible stakeholder groups include external suppliers (booksellers, Internet Service Providers), support and lobby groups and agencies such as the Friends of the Library, other libraries in a consortium, perhaps even national government.

2.3.3 Local government as a stakeholder

Local governments in New Zealand collect money from residents and businesses in the form of rates, and redistribute it through grants and services. All local government authorities in New Zealand provide a public library service, though this is not a legal requirement[3]. Because it provides the funds it will be interested in seeing that the library is effective. An authority will set broad policy directions but allow the library manager discretion within that broad set of strategic objectives, so the interest in effectiveness is inevitably indirect. There is a question about who is the real 'council' – is it the elected representatives who form the Council and who vote upon the final decisions, or the permanent officers of the council who make the real decisions that are rubber-stamped by the elected members? It is an even-handed choice to recognise both as stakeholder groups.

[3] The *Local Government Act 2002* does not make it mandatory for local governments to provide a public library service.

This was *not* done in this research (reported in Chapters 4 and 5) and the failure to include the permanent officers of the local government authorities as a stakeholder group is perhaps a weakness in the research. Treating each local government authority as an entity capable of deciding for itself what it expects from its own public library is a strength. Because all the public libraries have different political masters, each one will be different. Councillors bring political agendas with them, so getting funding for certain services may be easier than for others; e.g. services to the disadvantaged, and children's services. This makes it all the more important that every library recognises that it operates in a unique environment and should be prepared to determine its own objectives, and that can only be done if all key stakeholder groups are asked to say what they expect the library to do.

Local government is interested in effectiveness indirectly because it cares for cost efficiency, and it has delegated to the library manager the role of looking after effectiveness. A problem is that librarians are not in a position to judge effectiveness because they alone can not say what the library ought to be doing; they need the input of all stakeholder groups to determine that. It seems logical that if local government looked after the efficiency of the library by setting management targets for outputs then this is also effectiveness (Bird, 1981, p. 14). This is in contrast to Hernon and Altman (1996, p. 20) who said that efficiency can be counter-productive to effectiveness because if the two demands from the local government authority are for keeping costs down as a priority, yet improving effectiveness is a secondary aim, it might not be possible to achieve both simultaneously. That is why the library needs other stakeholders beyond the funding providers, for if the funder becomes concerned with costs it would require some alternative views from other stakeholders, especially the customers, to say that improved services are more important than cost-cutting. That is a benefit of the Multiple Constituencies model.

2.3.4 Summary of multiple perspectives on effectiveness

Management theory places great emphasis on planning and setting objectives. Because objectives can be written to include a measure of attainment it has been common for organisations to evaluate their performance by comparing actual progress against planned objectives. By applying Cameron's Multiple Constituencies model it becomes possible to add an external perspective to the view of what the library should be doing. Only when we have the multiple perspectives gathered from the stakeholder groups can the library know "that which it is supposed to do" (Lynch, 1983) and hence evaluate its effectiveness. The

external perspective is used to set the library's objectives. It does not call upon the stakeholders to make an assessment on how well the library is doing.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal	Resource use Procedures	
	External	Setting objectives Stakeholder expectations	

2.4 The Customer Perspective and Quality

A brief look at the history of industrialisation will show that the customer has not always been king. Henry Ford introduced mass production methods that greatly reduced the cost of consumer goods, but he kept customers and suppliers at arm's length, and that remained typical of industry and commerce until well after 1945. The growth of the quality management concept in the U.S. in the early 1990s was a natural progression for commercial concerns interested in increasing profitability, for it became apparent that many customers were seeking out quality products and quality service as their preferred choices, hence the providers of quality products and services benefitted. "Especially today, when there are so many commoditized products and services available to consumers, one of the most attainable ways to ensure long-term competitive advantage is not through price, but through the ability to provide quality individualized services or packages of customer service attached to each transaction (Schachter, 2006, p. 8). Commercial concerns had the 'bottom line' to use as a means of evaluating this, and because the providers of quality products and services were successful the same conclusions about quality were eventually reached by non-profits, including libraries. This interest in developing quality in library services was intensified as competing information services, especially Internet-based services, developed in the mid- and late-1990s. Yet the whole concept of quality for non-profits was, and still remains, elusive (Powell, 2006, p. 102) and the word is debased by over-use. The word quality was once used almost casually for anything that library managers deemed to be good for the library: "they [library managers] have also looked at an elusive concept – *quality* – in terms of

collections (size, titles held, and breadth of subject coverage) and the effectiveness (extent to which goals and objectives are set and met) of library services" (Nitecki & Hernon, 2000, p. 259). This use by library managers of the word 'quality' is much too simple and does not help define the word in context. Nitecki and Hernon go on to define the term as meeting customer expectations, which is how the word has been used in this research.

A mistake made by some library managers was to try to determine themselves the nature of a quality library service, for this was the self-belief inherent when trying to determine effectiveness in the 1970s and 1980s (section 2.3). They felt they were equipped to decide what services should be provided and at what levels. They did not ask the right questions and this often resulted in the library staff and resources being used to deliver products and services that should not have been a priority. "The failure to address such questions resulted in doing things well that did not need to be done and a constant search for more resources as an end in itself" (Kinnell, 1995, p. 268). To some extent this was the result of simply using the word 'quality' without sufficient precision. For example, in a review of measures for electronic services Poll (2001) said "Performance indicators are used as tools for assessing the quality of a library's products and services" (p. 307) though indicators included for measuring networked library services are mostly measures of inputs and outputs and so more closely tied to measuring efficiency rather than quality. Indeed, having discussed the proposed indicators, Poll said "Some of the indicators reviewed above do not seem to come up to this claim [i.e. assessing quality] because they merely measure the amount of resources allocated to electronic services" (p. 313), which supports concern expressed about using the term 'quality' without further definition.

Matthews (2002) deemed quality an output because it resulted from the conversion of inputs by the means of processes. In open systems theory quality could be considered to be the evaluation of an outcome because outputs have been used by customers who can then assess the quality of service they have received. Yet this view can only be valid if the determination of quality is retained within the task environment, that is, if the judgement of how well the library is meeting customer needs through its outputs is evaluated by the library. Orr (1973) used the term "how good the library *is*" to differentiate this from what the library *does*, so the library's 'quality' could actually be poor in the perception of the customers. McDonald and Micikas (1994) treated quality as a subset of effectiveness. It seems clear that there is no clear-cut place within the four categories of activities (inputs,

outputs, processes, and outcomes) for quality. Indeed, quality could be part of all four categories.

A widely used application of the term quality follows the work of Deming (1986) who summarised his management philosophy around 14 principles, which include the use of statistical process control, employee participation in control of their own quality, and continuous improvement processes. This collection of ideas, which has its origins in manufacturing, has become known as Total Quality Management (TQM) but the method as explained by Deming emphasises the practical over the theoretical. An attempt to formulate a theory of quality management said that "the theoretical essence of the Deming management method concerns the creation of an organisational system that fosters co-operation and leads to the facilitation and implementation of process management practices which, in turn, leads to continuous improvement of processes, products and services, and to employee fulfilment, both of which are critical to customer satisfaction, and ultimately to firm survival" (Anderson, Rangtusanthan, & Schroeder, 1994). A key point to note here is that all process refinement leads to the goal of customer satisfaction. If Deming's point that 90% of an organisation's problems can be dealt with by refining processes is accepted, then it is clear why this focus achieves results. So, although Deming, who was a statistician, put a lot of emphasis on improving processes, the ultimate aim of this was to improve customer satisfaction. At the same time that Deming's ideas were being accepted by American and Japanese industries, others such as Juran, Ishikawa, Taguchi, Feigenbaum, Champy and Davenport were all insisting on the same theme, that is, it is the customer's requirements and expectations that define quality (Reis, Pena & Lopes, 2003, p. 197).

A fairly similar management approach to TQM, though more developed as a tool, is Six Sigma. It, too, is a business strategy for organisations that wish to improve performance by monitoring everyday activities and then making changes to reduce errors and waste in processes. The focus is on moving every process that touches products and services towards greater 'quality' and it is thus appropriate to mention it here. Six Sigma is a structured and disciplined data-driven methodology for eliminating defects, waste or quality control problems of any kind, with the ultimate purpose being to improve the customer's experience. Although developed for manufacturing, Six Sigma has been applied to service organisations in healthcare and finance, and now some attention is being given to it by librarians (Kaushik, Shokeen, Kaushik and Khanduja, 2007). It fits well into

the dimension of 'conformance quality' described later in this section, where some simple suggestions for its use in library evaluation have been made, with further reference made in section 8.3.2.

There are close links between TQM and the balanced scorecard (section 2.6). Both are designed to improve the quality of service to customers, and both require the adoption of a broad-based approach to evaluation. The European Business Excellence Model, sometimes called the European Quality Assurance (EQA) model (which is similar to the Baldridge model used in the United States of America) is used quite extensively in the continent of its origin (EFQM, 2009). It consists of nine criteria for excellence, five being 'enablers' and four being 'results'. In this way it tries to overcome some of the problems of leading and lagging indicators mentioned in section 2.6.3. The criteria can be weighted, as they are in the Baldridge model. The five enablers are leadership, policy and strategy, people, partnership and resources, and processes. These criteria can be compared to many other sorts of assessment, though the criterion for 'leadership' is somewhat different for the model advocates a role modelling approach, which is supportive of the TQM framework. There is no claim in this model to formulate strategy, or to evaluate strategy, only to assess the process of forming strategy (McAdam & O'Neill, 1999, p. 192). The four 'results' sets used by the EFQM are customer results, people results, society results, and key performance results, with 'customer results' considered as the most important. The model is recommended by the EFQM as a basis for benchmarking between organisations (Brophy, 2006, p. 152). Benchmarking is described in sections 2.2.1 and 2.2.3. In New Zealand the business excellence method of assessment has been used by Hutt City Council since about 2002. It won a bronze commendation in 2004 and moved up to the silver level in 2006 (Jayne, 2006, p. 62). The Council's search for quality includes the Libraries, though unfortunately there is nothing in the literature on this.

A more detailed definition of quality is given by Kroon (1995), and although his ideas were aimed at a general marketing audience they have entered the LIS literature. He said quality has four dimensions:

Conformance quality. This definition of quality owes much to Total Quality Management and its emphasis on reducing product defects. In a library conformance could mean, for example, reducing the amount of time a computer server is down each week denying the customers access to information resources. This is more than a matter of efficiency, for most customers of electronic services have experienced the frustration that results from

server downtime, and if repeated too many times the customers give up on the service and go elsewhere. Kinnell includes 'freedom from deficiencies' as one of two broad categories that determine the quality of services (1995, p. 266), with 'service features' being the other. Complaints are also a measure of conformance quality.

Quality as expectations. In this dimension, quality is considered to be the difference between the expectations of customers and their perceptions of the organisation's actual performance. The gap between expectations and performance *is* the measure of quality, irrespective of any objections that might be made by the management (Hernon & Altman, 1996).

Market perceived quality. The key to this quality dimension is how well the customers regard the organisation compared to its competitors. Many librarians believe they have no competitors, but each library could consider how well it is perceived in comparison to similar libraries, and in comparison to other information providers such as Wikipedia[4]. Benchmarking is a tool for the comparison of services and processes, and mystery shopping is used by several commercial companies as a means of comparing themselves to similar providers.

Strategic quality. This is measured by the combination of price and quality the organisation wishes to take to the market. Again, many librarians would not believe this is a relevant way of evaluating a library, but all libraries make a conscious or unconscious decision on branding and their place in the market. A public library does itself no favours by not charging for its services because as a result it comes to be regarded as the 'discount' service in the marketplace. Some libraries have discovered that charging for new books (often called a 'bestseller' collection) is well regarded by some customers who are willing to pay for a 'value-added' service (Bentley, 2006).

All four dimensions of quality have some relevance to libraries, though it is the second one on the list – quality as expectations – that has been examined in the greatest detail, and it is this dimension that underpins the research described here in Chapters Eight to Eleven. In this definition the key 'measure' of quality is what the customers say it is. Simply, if the customers say that the library is delivering good service quality, then it is. If the customers say the service quality is low, then it is, and no protesting by the library manager will change that. Some library directors are clear about this: "many organizations, especially nonprofit organizations like libraries, are unsure about the use of 'quality' as a management tool because quality as a concept can mean so many things to so many

[4] http://www.wikipedia.org/

people. With TQM as a context, quality for libraries is defined by library users." (Gapen, Hampton & Schmitt, 1993, p. 21.)

This is *not* evaluating customer satisfaction, though once again, the use of terms such as 'satisfaction' and 'service' is occasionally very loose in the LIS literature. The use made here of these two terms is that customer satisfaction relates to a particular transaction and at the end of that transaction the customer can be asked to say how much he/she is satisfied with the transaction. Service quality, to differentiate it from satisfaction, comes from a longer-held attitude to the organisation that is built up over time. One transaction that leaves the customer unsatisfied will not necessarily change the perception of service quality, though it will probably reduce it. Service quality is generally more holistic than satisfaction and can be affected by all aspects of customer experience as many and varied as the convenience of car parking or public transport, the cleanliness of the toilets, and the colour scheme of the building.

Many librarians find it hard to use the word 'customers' for those people who walk in through the library door, or those who access services remotely (commented on by Goleski, 1995). The far more passive 'user' or 'patron' was commonly used to denote those people, but the focus of quality management is so much upon the customer that some acceptance of the vocabulary of TQM is required before this method can work. A library using TQM will need to appreciate the potential disturbances the language of quality management can cause. "In Oregon's case, the group recognized that the jargon of TQM was offensive to some members, but they agreed that inventing a new jargon was not worthwhile use of time" (Butcher, 1993, p. 47). It ought to be apparent to even the most conservative of librarians that there are now many competing agencies in information delivery and libraries need to attract use just as businesses need to attract sales. If a relatively simple change in the terminology used by library staff encourages a cultural shift (which is part and parcel of TQM) then it seems little to expect staff to use the word 'customer' rather than 'user' or 'borrower'.

The most frequently used method to evaluate service quality employs gap analysis, or disconfirmation theory (Kroon's second point). This measures the difference between library customer's expectations and their perceptions of service performance. The work in marketing by Parasuraman, Berry and Zeithaml, which resulted in the SERVQUAL tool, sparked at least two different streams of service quality research commencing from the

point that "Only customers judge quality: all other judgements are essentially irrelevant" (Zeithaml, Parasuraman, & Berry, 1990, p. 16). The first, led by Hernon and Altman (1996) has aimed at producing tools that can be customised by managers for local purposes. It is entirely pragmatic in its intended application though rooted in marketing theory. It is institution specific and benchmarking occurs locally (Hernon, 1997). This approach is used in this research. The other, the LibQUAL+ approach, broadly aims at a single method of assessment that can be used by all libraries who sign up for it, though according to Shi and Levy (2005, p. 272), "the current LibQUAL+ is not yet an adequately developed tool to measure and represent a dependable library services assessment result". Another problem with LibQUAL+ in practice has been the low response rate found across libraries using the tool, with the State University of New York reporting a response rate between 0.3 to 4.9 percent (Shi & Levy, 2005). LibQUAL+ can be used internally by managers, but as libraries using this instrument all assess their performance using the same indicators, some amount of peer comparison is possible.

2.4.1 The customer is not always right

Having said that customers are the key and that quality is what the customers say it is, a word of caution is necessary. Even using the word 'customer' seems to diminish the role of the professional, according to some librarians (Wang, 2006, p. 610). They need to understand that library evaluation is a tool primarily for library managers, and secondarily for the stakeholders, to assist in making better decisions that improve service quality. It does not mean that the results of evaluation drive all decisions in the library and that the customer is always right. As an example, a customer might walk into a small public library in New Zealand and expect to find a telephone directory for Xian in China, but it won't be on the reference shelves. Why not? First, because library managers have to make resource allocation decisions on behalf of the community, which encourages focus on the needs of the majority rather than individuals. Second, and more importantly, the library has a mission and all decisions should be directed towards it. If the library has a mission to deliver information resources to its community, then it doesn't become a cinema or game arcade just because its customers have said they want that. After conducting surveys of customers, one library director said "The value of the surveys was not to have the customer declare how the library should be run, but rather to help the library determine how closely its views of the wants of the users reflected the reality of what the library provided" (Butcher, 1993, p. 48). Kinnell (1995, p. 265) also describes this in fairly similar terms, saying that quality is determined by the customer rather than by the provider,

but the library as provider has to set down standards of service first. Once the standards have been set, however, it is only the customers who can say how good the service is. Library managers then try to meet customer expectations.

All managers, no matter what the industry, face the quandary of listening to customers on the one hand, but knowing on the other that a product or service *could* be better, but the customers don't yet know it. The computer disc industry was a classic case of companies listening to customers who wanted improvements to existing technology, while all the time the manufacturers knew that better technology was already available. Eventually the new technologies arrived and the disc companies duly suffered. "The lesson to be learned here is that it is important to listen to your customers but not to the exclusion of good sense, industry changes, and other signs" (Schachter, 2006, p. 9).

Kinnell's proposed method for achieving quality is based upon the TQM model. The first stage in her method is planning, in which the library sets it goals for the service. This will include identifying the target market sectors and their information needs. The elements of the service and the processes it will use are established at this point, and control mechanisms to monitor the processes are established (Kinnell, 1995, p. 265). The second stage is quality control in which the actual monitoring is done using measures that are designed to elicit information needed to assess how well the service is performing, e.g. customer surveys or mystery shopping. The third stage is quality improvement, which is largely a process for improving different elements of the service through projects and programmes. Based upon what the customers say the organisation has the chance to change its processes to bring service provision into closer alignment to customer expectations. This is standard in TQM, in which it is called 'continuous improvement' and is necessary because customers' needs and expectations are changing all the time (Wang, 2006). It is Kinnell's second stage that is closest to the focus of this research for it is there that most of the evaluation and measurement occurs, and it can usually be done with output measures (Rowley, 2005). However, the first stage is an essential precursor for it is there that the goals for the service, and the identification of key customer markets, is made. If that is not done then it is hard to be sure that the organisation/library is doing what it should be doing, and that is where the measurement of quality can lead to resources being used for low priority purposes.

2.4.2 Summary of the customer perspective and quality

This section introduced methods for an external evaluation of the library's products and services as experienced by customers. Initially this was done indirectly by measuring outputs, etc. but actual customer assessment means that a direct evaluation can be made of the use of the results of the library system at work. This view has mixed origins. In part it comes from Total Quality Management's interest in meeting customer expectations, which is achieved by improving process and by lowering errors within the system that could results in dissatisfaction or even complaints. It also originates in the totally different field of marketing where the SERVQUAL model was the synthesis of a progression of theoretical developments in disconfirmation theory in which the method was designed to assist organisations get their products and services closer to customer expectations by gathering opinions on both what the customers expected and what they perceived was being delivered.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal	Resource use Procedures	
	External	Setting objectives Stakeholder expectations	Service quality Reducing complaints

2.5 Calculating benefits or value

The LIS literature seems almost evenly split on the use of the word 'value'. One fairly narrow use of the word value has been in the economic sense of getting value for money, or return on investment, and it is this use of the word that will be examined in the first part of this section. The much more general use of 'value' when describing libraries' contributions to society uses the word in a non-economic way, and that will be examined later in this section. This research makes no judgement call on which definition is superior.

2.5.1 Economic value

There is no specific reason for costs and economic benefits to be considered separately to other aspects of library effectiveness, but in practice they are rarely dealt with in an

integrated manner. Costs, though, should figure more extensively in the LIS literature for a number of simple reasons. First, libraries need money to operate; in some cases quite substantial amounts of money. Second, library managers frequently bemoan the difficulty of convincing funding agencies of the need to give more money, yet often they make a poor business case for increased funding. Third, the economic benefits of libraries are poorly understood and, perhaps as a result, often overlooked. It is believed by some library managers that after comparing costs to benefits a stronger case can be made by a library for more resources: the strength of a method favoured in New Zealand, the V+LM method (Value-Added Library Methodology), is that "new or changed services can be costed and their value used to gain support" (MacEachern, 2001, p. 235).

Assessing the benefits provided by a library can tell us something about their value even though it is not possible to calculate the precise value of the library's outcomes. "When the real impact of an information system cannot be measured, the perceived value may have to be accepted as a proxy. The perceived value approach is based on the subjective evaluation by users and presumes that users can recognise the benefits derived from an information service" (Broadbent & Lofgren, 1991, p. 98).

A simple classification divides a library's benefits to society into 'use' and 'non-use', where 'use' includes benefits that accrue directly to the individual such as access to information for educational, recreational or economic purposes, and 'non-use' is for benefits that individuals perceive the library providing to society as a whole even though the benefits might not be immediately experienced by the individual. Examples of non-use include the maintenance of intellectual freedom, improving literacy levels and reducing social divisions. Any analysis of costs and benefits ought to assess both these aspects but in practice this is rare. Many of the non-use characteristics are, however, highly relevant to an assessment of a library's 'value' to society and will be discussed in this context later. Societal benefits have also been treated as an outcome (section 2.5.4).

The community receives direct (use) and indirect (non-use) economic benefits from libraries, and McClure, Fraser, Nelson & Robbins (2001) produced a six cell matrix to extend this. They divided direct and indirect benefits according to whether they were for the individual, local business or the local community. Here are some examples.
Direct benefits:

- Individual – saving the cost of purchasing materials that can be borrowed;

- Local business – access to legislation, custom mailing lists;
- Local community – employment of local people, and local purchase of materials.

Indirect benefits:

- Individual – increased property values;
- Local business – a literate workforce;
- Local community – quality of life and cultural factors.

Schauer (1986) said that the best indicator of value is usage, but this is circular because use will only follow if the library is already providing some value. Lancaster (1977) listed ways in which individuals or organisations could save costs by using a library:

- cost savings that come from using a library service compared to other ways of accessing information;
- the avoidance of a loss of productivity if the information was *not* available;
- improved decision making or reduced numbers of decision makers made possible by using relevant information at the right time;
- the avoidance of duplication in research and development;
- a stimulation of invention or productivity.

Lancaster seemed to be saying that the library only needs to supply the documents – what the end-user does with them is not the library's business. Miller (2004) said "benefit could be measured in actual cost savings, in terms of the willingness of users to pay in terms of real price, cost savings in dollars or time, decrease in uncertainty, decrease in duplication of work or potential loss of productivity". So, although there are different ways in which a customer can receive cost benefits by using a library, it is clear that such benefits do exist. The task is to find ways to measure the benefits.

An analysis of costs to benefits is applicable to the study of library effectiveness because the object of the analyses is the same. Both look at what the library does internally (the library uses inputs and it has processes) and at what the library produces in terms of outputs and outcomes. Library effectiveness models might examine internal processes, for example, and because these processes have a cost, a cost benefit analysis might take the same evidence into account. They might examine the same data but use a different method to analyse it. Equally, a library effectiveness model that considers customer satisfaction to be important could be similar to a cost benefit analysis which asks customers to place a monetary value on services they received from the library. It then follows that performance measures designed for one could measure the other equally well.

2.5.2 Cost benefit analysis

Cost benefit analysis is commonly defined as determining whether the value of the service is more or less than the cost of providing it. This is the sort of information that funding agencies expect but rarely get from library managers. Economic value is not synonymous with financial or commercial value, though it shares with those concepts its expression in terms of money. Economic value comprises any direct use value of the service (or economic goods) plus any other non-market values it may give rise to (Throsby, 2003, p.279).

There are five different approaches to cost-benefit analysis:

- Maximise benefits for a fixed cost;
- Minimise costs for given level of benefits;
- Maximise net benefits (present value of benefits minus present value of costs);
- Maximise the internal rate of return;
- Maximise ratio of benefits over cost (Matthews, 2002, pp. 78-79).

It is accepted by most writers that only the last method is applicable in libraries (e.g. Matthews, 2004, p.141). This is a deceptively easy method to use in which all the benefits are converted to a monetary value and then expressed as a ratio of benefits to costs, so if the library says there is $10.00 of benefits from its services for every $1.00 of costs, the ratio is 10:1. This is the Contingent Valuation Method (CVM). Contingent valuation commonly uses surveys for the valuation of non-market resources, such as environmental preservation, the impact of contamination, or the value of libraries and museums. These non-market resources give people utility but often the resources do not have a market price as they are not directly sold; for example, people receive benefits from viewing a beautiful New Zealand mountain but it would be difficult to value this using price-based models. Contingent valuation is also called the *stated preference* model. A common stated preference method of CVM uses a Willingness to Pay (WTP) assessment, in which the respondent is asked to say how much they would pay (or exchange) for a product or service if it were sold on an open market. The question could be "How much are you willing to pay for remote access to the library catalogue?" This assumes that individual decision-makers can rationally maximise the potential utility offered by not-for-profit goods and services and that they are the best judges of their own welfare. An alternative is the Willingness to Accept (WTA) assessment, which could ask the question "what is the minimum amount you would be prepared to accept in compensation for the loss of the

mobile library service?" An important point to make here is that CVM methods take no note of any social welfare that might lie beyond the welfare of individuals.

A typical 'benefit' will be cost savings to an individual that can result from not having to purchase a book or journal, and from time saved while finding information. In an early attempt to put a monetary value on library services, Blagden (1975) tried to ascertain the costs to a company of finding information from external sources compared to acquiring the same information through an in-house library. His study showed some cost savings and a superior quality of answers provided by the in-house library, though this was based upon the assumption that all the information supplied was useful. Recent studies of libraries using contingent valuation have been done in Norway, the United Kingdom, and the United States of America (examples respectively Aabo & Audunson, 2002; Bolton Metropolitan Borough Council, 2006; Griffiths, King, Tomer, Lynch & Harrington, 2004).

Glen Holt of St. Louis Public Library is probably the most prolific writer on cost-benefit analysis for libraries. One method he has suggested is 'consumer surplus' in which customers are asked to state the value that they place on each service provided by the library, which is very similar to the contingent valuation method in that the only difference is that consumer surplus is intended to find a figure for the difference between what is provided for the customer (usually by a tax-funded agency) and what they would be willing to pay for it, with the difference being the 'consumer surplus'. Using this method Holt and his colleagues produced a ratio of more than $10.00 of benefits to each $1.00 of funding support (Holt, Elliott & Moore, 1999). A similar study of Norway's public libraries also produced a ratio of more benefits than costs. This study was designed to show that the overall effects of a policy change on society was the aggregate of the effects of the change on all individuals who comprise society, the suggestion being that society should make changes in library funding only if the results are worth more in terms of individuals' welfare than what is given up by diverting resources and inputs from other areas (Aabe, 2005). A Florida study asked survey participants to indicate in dollar terms the value to them of discrete library programmes and services, which the researchers then converted into a retail price for those services, and the sum of them all was taken to equal the total benefits received by library customers. The return (or cost-benefit) was calculated at US$6.27 for every $1.00 invested (McClure*, et al*, 2001). The most significant criticism of this method is that consumers may willingly state a value for a service that, in practice, they would not pay.

A comprehensive British study used a method that did not ask customers to suggest the value of services, but rather used concrete data such as retail book prices. In this study the determination of value was the benefit of the whole library service in economic terms, that is, are library customers better off than they would be if there was no library? They concluded that the total benefit of public libraries amounted to 98 million pounds more than they produce, or a 13.6% return (Morris, Hawkins & Sumsion, 2001, p. 303).

To McGee and Prusak (1993) the value of information lies in its relevance to competitive corporate strategy, for the ability of an organisation to use information effectively will give it an advantage over its rivals so any contribution made by a librarian to developing strategy will be seen as adding value. This is just one example of possible value from a library; there could be many more for each library examined and no two libraries would be exactly the same. This reinforces the need for a library to be precise about its mission and overall objectives. Then, "as with other past library evaluation methodologies, determining whether the return demonstrates that a library is an effective and efficient provider of services, or whether the return is low because of decisions that organisations or funders have made about the role of a library or its services needs to be taken into account. The context therefore of the particular library is a factor which influences the outcome and demonstrating where a library should be targeting its return on investment would provide a basis to take the research into a practical outcome" (Missingham, 2005, p. 152). The connection to TQM is clear, that the mission comes first, then planning, good management, and ultimately good customer service.

Many CVM studies assess only benefits to individuals, but examining benefits to the community can also show a return on investment. The Florida study (McClure, *et al*, 2001) showed that the state's public libraries created value for *all* people in the state irrespective of their use of the library. There are indirect benefits because public libraries make an impact on education and the economy through the benefits given to individuals being passed on to the community (Griffiths, *et al*, 2004). For example, a small businessman who improves his profits after reading a marketing magazine in the library creates wealth not only for himself, but for the wider community. The Florida study gave greater detail to an argument made previously by writers such as Sawyer (1996) in which benefits to the Ontario (Canada) economy included services and information for businesses, lifelong learners, and job seekers.

Although the subject of the evaluation is the use of the library's products and services, the perspective is internal. Customers might be asked questions about the value they place on services but it is the librarians who will make assessments about what the data means, for customers rarely care about this concept. This is inevitable because there is no clear message from cost-benefit data. There is no data that tells us precisely what customers think of the value of the services they are given.

An immediate problem with CVM is the assumption of full knowledge among individuals of the products and services being valued, yet this is rarely going to be the case. An option suggested for dealing with this difficulty is that instead of using the general public to determine the value of not-for-profit services, the opinion of an expert or a team of experts could be used instead (Throsby, 2003, p. 277). This might appeal to library managers, but it means the internal view prevails, with the managers and funding agents deciding what resources should be allocated to the library – back to square one, in other words.

2.5.3 The notion of value

The previous section made it plain that libraries continually face the problem of being a cost centre, and as a result face the possibility of budget cuts or even complete closure. The problem with cost-benefit analysis is that, for all its precision in economic terms, it requires decisions to be made about 'value' and inevitably those values are in competition with each other. This means that library managers must recognise that there is more than one way of determining 'value' in a library (Wills & Oldman, 1974) but due to the fact that services are usually delivered at no charge directly to the end-user the benefits of the services are not easily identified or measured. Librarians in general do not have a clear understanding of what value means in the context of information services (Matarazzo & Prusak, 1990). This is partly explained by the difficulty in defining the word itself, for it has two separate meanings. Firstly, value can be defined as "That amount of some commodity, medium of exchange, etc., which is considered to be an equivalent for something else; a fair or adequate equivalent or return" (Oxford English Dictionary, 1989) and this economic definition is rather different from the alternative "A standard of estimation or exchange; an amount or sum reckoned in terms of this; a thing regarded as worth having" (Oxford English Dictionary, 1989). The first use of the term can lead to a precise valuation of an object because it is based upon a price, whereas the second definition is based upon a more subjective judgment that the thing is "worth having". The

latter sense of value is based upon perceptions of worth or importance to the possessor and its utility or merit: beauty is in the eye of the beholder, or at least in his or her belief system. Thus dollar values are an incomplete measure of value. This is made explicit in a comment from a librarian who has used the contingent valuation method and been dissatisfied by the results: "Having used this methodology on a project I was involved in recently with colleagues, it seemed to us an incredibly flawed system of valuing an abstract concept, such as the worth of a public library" (McMenemy, 2007, p. 274). This is revealing for two reason, first for the obvious dissatisfaction with the method, and second because this writer has stated clearly that the method was being used to evaluate the library based upon costs, the first definition of the word given above, while he considers the real value of the library to lie in its 'worth', the second definition above. He went on to argue that the use of contingent valuation (or any similar method) changed the discourse about public libraries in a very significant way. Instead of examining the funding of public libraries based upon their *societal benefit* (McMenemy's words, p. 272) the discourse shifted to a debate about funding public libraries based upon economic benefit, and while societal and economic benefits could go hand in hand in some cases, this "cheapened" the concept by emphasising economic value over other values.

So, using McMenemy's argument, beyond the attempt to calculate the dollar value of information services lays a largely unexplored area of attempting to describe value in terms of what the library and its products and services enable its customers and clients to achieve. This is getting close to the concept of 'outcomes' dealt with in more detail later. Most public library managers would say that the library contributes to social capital because it helps with the development of an informed citizenry and a stronger community (e.g. Preer, 2001). This is significant when viewed in relation to outcomes (section 2.5.4) because value is not necessarily recognised as an outcome and "most work on the subject of value has actually stopped short of the kind of evaluation which identifies the *outcomes* for users of the information or documentation they receive from a service or the benefits the perceive" (Kinnell, 1995, p. 266). So, and this is a crucial distinction, value in this sense will be found in the general benefits that accrue to society from the library's contribution to the communal 'good' rather than any specific results for individuals that could be regarded as outcomes or cause-and-effect relationships between the library and how an individual makes use of its products and services.

It is worth noting here the importance attached to library staff by customers and clients. Social capital, for example, is created through trust (Pors, 2008), and trust is a result of cooperation built upon reciprocity (which could also be called Natural Law), which suggests when customers trust the library staff, value is created. Where there is trust, the cost of transactions are reduced, thus adding an economic benefit to the social benefit already implied by the term social capital, and it emanates from the behaviour of library staff. Perhaps because information is itself so amorphous, customers often focus on the value provided by staff. Depending upon the mindset of the person receiving the service, what is being assessed could include:

- value of the products or services delivered;
- value of the role of the information professional or librarian;
- value of the contribution made by the information professional to the organisation;
- value-added activities (e.g. summaries of research results) (Sykes, 2003, p. 12).

The role of the information professional (in this research more frequently called the librarian) can be reactive, such as attempting to meet a request for specific information, but it can also be proactive, such as disseminating information to an individual, a community or an organisation before it is requested, or summarising information into easily digestible packages, or by participating in the planning of community or organisational initiatives. None of this can be predicted in advance so it is hard for customers to place a dollar value on it. It is worth noting the high number of occurrences of the staff being highlighted as creators of value (from the second and third points in the list from Sykes given above). A New Zealand example quoted this directly: "There was a direct correlation between the quality of the Parliamentary Library's services and the expertise and experience of its staff" (MacEachern, 2001, p. 234). An example from Europe: "As a result of the intangible and interactive nature of services, customers often rely on the behaviour of service employees when judging the quality of a service" (Hennig-Thurau, 2004, p. 460). And a more detailed example from the United States of America: "The academic library and librarians contribute to student and faculty success by being well educated, helpful, and service-oriented. At our college the librarians are well known throughout the campus for going out of their way to find materials students and faculty need. They contribute to student and faculty success by keeping current with technology and promoting the availability of all types of in-house and electronic services. As the use of technology for libraries has expanded, the librarians search for ways to make it more user-friendly and

available to students and college personnel, whether they are in the library, on campus, in offices, or at home" (Blackaby, 2007, p. 299). The importance of staff to value is also displayed in other ways of evaluating libraries, for "Three out of five service dimensions of [the] SERVQUAL measure directly or indirectly address the behaviour of employees (i.e. responsiveness, assurance, and empathy) (Hennig-Thurau, 2004, p. 461).

A complication for assessing the value of a library is that information retains its usefulness for a long period of time – relative that is, to perishable products or those that depend upon fashion. A resource many years old can be useful in research. For this reason librarians collect material and store it for later reference; an activity usually termed collection building or collection development. The act of selection and retention is a central part of the professional knowledge of a librarian: "By carefully selecting a small portion of the universe of information and forming a collection, librarians in fact create a super text" (Fattahi & Afshar, 2006, p. 139). But how does this create value? Value here comes from more than one source. By having the documents already selected, stored and indexed, the library can save the time of the customer. Further, by collocating items of a similar nature, a customer may find documents of which they were previously unaware. Heuristic searching and discovery of documents previously unknown to the searcher is clearly adding value, but it is hard to calculate how much. Indeed, it is often the unexpected discovery of a document that sparks a new trail of thought that can lead to new research, and subsequently, to new knowledge.

This section has dealt with value as perceived by individuals, yet library managers would contest this assumption because the profession has a strong philosophy of creating social value. Rather than regarding the library in relation to individuals, library managers usually think of a relationship with the community. This sees value as a commonly held property rather than one for individuals alone. A book, when read by an individual has some value, but when read by several people, this same book allows for a cross-fertilisation of ideas that we could term 'culture'. If culture is a set of beliefs, traditions and customs, then books and similar artefacts play a huge part in the development and maintenance of culture. The value of Shakespeare's works to an individual cannot possibly match the role of Shakespeare in developing Anglophone cultures. Because this collective value, or social value, cannot be assessed with CVM, there is a limitation in its use for assessing the cost-benefit of library services, and the use of such methods will consistently under-value the benefits that libraries and other cultural services produce (Throsby, 2003).

2.5.4 Outcomes

The systems analysis used earlier in this chapter showed how inputs go into the processes that produce outputs. Beyond outputs lies the still largely uncharted world of outcomes or impacts; that is, the results of library outputs on the individuals who use them. An early attempt at a definition said outcomes "should be defined in terms of what effect or impact this exposure has on the client" (Blagden, 1975, p. 2) and this is still at the core of many subsequent investigations of outcomes evaluation. An output, according to Hernon and Dugan (2004) is institutionally or organisationally based, but an outcome is the impact of an output on an individual and occurs within the person. As such, it can include changes in attitude, skills, knowledge, behaviour or status. Another way of describing an outcome is to say that it answers the question 'how well?' and expects the answer to be framed in terms of the library's impact on those who use its services or who might benefit indirectly from them (Hernon, 2002). This makes outcomes assessment similar to impact assessment. But the broad nature of outcomes poses some problems in measuring them.

This list gives broad outcomes:

- Knowledge
- Information literacy
- Higher academic or professional success
- Social inclusion
- Individual well-being (Poll & Payne, 2006).

This is very similar to another list of library outcomes:

- Knowledge
- Skills
- Attitude and values
- Enjoyment, inspiration, and creativity
- Activity, behaviour, and progression (Cram & Shine, 2004).

The focus is on developing the whole person, either through knowledge or changed attitudes. Librarians hope that the library's work eventually leads to such outcomes, but the items on the list are general and very hard to measure. An individual will be exposed to numerous influences and it is almost impossible to demarcate the division between a library's impact and, as one example, ethics and attitudes inculcated by family members, friends and teachers.

Another list gives a range of more specific outcomes:

- Speed by which items are reshelved;
- Working speed of equipment;
- Promptness and speed by which complaints are handled;
- Degree to which customers can be self-sufficient;
- Extent to which staff feel empowered to resolve problems encountered by customers in their search for information;
- Length of time that customers must wait at service desks to have their information needs met. (Hernon, 1997).

In fact almost all of these suggestions were included in survey statements used in the service quality part of the research described in later chapters (Chapters Eight to Eleven). Customers simply rated their expectations of the service and their perceptions of how well the service was performing, e.g. in response to a statement such as "I do not have to wait more than three minutes when I ask for assistance at a reference enquiry desk" (see Chapter 9, question number 20). It could be that service quality is an outcome, but using this statement as an example, it is surely not uncovering any change in attitude or knowledge on the part of the customer, only an attitude in response to the service provided, therefore it can't be measuring an outcome.

Some authors (e.g. Hernon, 2002; Brophy, 2005) recognise that outcomes can range from the direct to the indirect, from the 'loosely suggestive' to the "absolute state of knowledge in which a documented change is proven" (Hernon, 2002, p. 55). In the social sciences, of which library and information science is a part, it is rare to be able to prove *anything* with absolute conviction because the subject is often the erratic behaviour of human beings, hence outcomes measurement depends upon inference even more than some other forms of evaluation such as service quality. The difficulty for outcomes assessment is that all attempts at measurement are at the indirect end of the spectrum. Because they can only be understood in the context of the individuals whose lives are changed as a result of using the library, the methods for measuring outcomes must surely be contextual in their nature. The *How Libraries and Librarians Help* project attempted to set the outcomes into context, drawing on the large body of information behaviour research, and people's everyday use of information (Durrance & Fisher, 2003).

Brophy (2005, pp. 60-61) developed a basic scale for the Level of Impact made by a library. The scale recognises, as other authors have done (e.g. Poll & Payne, 2006) that an

outcome can be negative as well as positive. It ranges from the negative of 'hostility' to the highly positive of 'changed action'. The method of assessment was almost entirely qualitative and used people's "stories" of their library experiences to judge the level of impact. This method of drawing on evidence seems the most promising means to assess outcomes (Markless & Streatfield, 2006).

One library sector in which it might be possible to assess outcomes is that of special librarianship, those libraries providing an information service to a specific group of clients all working for the same organisation. Because the library's clients usually all have the same work-based objectives it could be possible to devise a scheme to monitor and perhaps measure the impact of the library on how well staff reach those objectives. Working for a defence research agency, all staff knew what was expected of them, and as "excellence and quality of research were given the highest priority" they appreciated that "an effective and accessible library and information service" was core to them achieving the medium and long-term objectives of the organisation (Thornton, 2005, p. 110). Given the similar needs of all the staff it was then possible for the library manager to state that the "impact of our core service on their ability to have written specific reports" (Thornton, 2005) was all that was needed to measure impacts.

A vague application of the word 'outcomes' leads to confusion. Some writers have called cost-benefit studies measures of outcomes. Others have talked about long-term social impacts as outcomes. Usherwood (2002) used both in his definition of outcomes. Cost-benefit and the economic assessment of a library's worth is best left as a measure of value (see 2.5.2 and 2.5.3) and the social impact of the library is not a direct measure of a change in an individual. Earlier it was shown how most definitions of outcomes say that an outcome is a change in an individual.

The personal nature of outcomes makes it extremely difficult to create effective measures. In the absence of any really specific definition of what the outcome of a library service might be, it is not surprising that no measure has managed to achieve acceptance by the profession.

When describing the new edition of the IFLA book on performance measurement, Poll (2008, p. 28) explains why the new edition does not include outcome measures: "measures for the outcome or impact of library services on users and on society have not yet been

included, as methods and possible 'indicators' are still being developed and tested in projects". Her reluctance to say whether outcomes would measure the impact on the individual or on society perhaps illustrates the degree of confusion that still exists about what outcomes can actually be assessed. Two leading writers in the field of library evaluation are clear that they have doubts about achieving accurate measures of outcomes: "The answers we can supply today aren't good enough. We cannot currently measure outcomes and effects systematically with much success (McClure & Bertot, 2001, p. 320). One of the most respected writers on library evaluation points to a major difficulty in assessing outcomes is their very general and often long-term nature: "Unfortunately, the desired outcomes will tend to relate to long-term social, behavioural, or even economic objectives that are rather intangible and, therefore, not easily converted into concrete evaluation criteria" (Lancaster, 1988, p. 3). Hernon (2002, p. 2) says that "an outcome, such as students showed [sic] improved information literacy skills, is vague and open to varied interpretation". He goes on to suggest pre- and post-testing as one way of assessing the library's impact (as do Fister, 2003; Poll & Payne, 2006), and though this would measure some change in a student's knowledge, there are numerous other factors that could have been far more significant than anything done by the library – and it assumes the student is available for testing and agrees to it. Only in very controlled environments in which testing can be done very precisely, such as a school classroom, could pre-and post-testing possibly measure library outcomes.

2.5.5 Summary of calculating benefits of value

Value is a word much used in the LIS literature, but sometimes without definition. In this section it has been used in two senses: of value as a price and value as a sense of worth. Used in the first sense value can be calculated precisely (if not absolutely convincingly) using cost-benefit analysis methods. In the second sense the library is being assessed in a much broader way, for its contribution to society as a whole and its contribution to social capital. The first use of value is one librarians are familiar but not always comfortable with, while the second is much closer to the prevailing philosophy of service to the community. Almost all librarians will be comfortable with the second sense of value. This comment comes from a renowned poet who became the Librarian of Congress: "What is more important in a library than anything else – than everything else – is the fact that it exists" (MacLeish, 1972). The problem is that it returns the assessment of value back to the library as an organisation, which does not necessarily guarantee any sort of acceptance by crucial funding agencies.

There is no definition of outcomes that satisfies all writers and researchers, but the most commonly accepted is the impact of the library on an individual that changes their knowledge, behaviour or attitudes. Few outcomes are directly experienced by the individual so it is possible that the most accurate measures will be contextual in nature, probably evidence–based, such as customers telling their stories. Several writers have said they do not believe that any accurate outcome measures have yet been devised.

The fourth and final part of the matrix is the addition of value as an internal perspective on library use.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal	Resource use Procedures	Cost-benefit Contribution to social capital
	External	Setting objectives Stakeholder expectations	Service quality Reducing complaints

2.6 The Multiple View of Effectiveness

There are now numerous methods of evaluation and performance measures available, so managers are in the position of being able to select methods and measures to order. This is not wholly desirable. A focus on one measure can be misleading if it does not accurately represent the organisation's performance as a whole. "The ever present danger is that by focusing attention on particular aspects of service, it will encourage partial and therefore deficient management attention" (Brophy, 2006, p. 160). Alternatively, using too many measures can lead to confusion within the organisation if there is no understanding of how each measure should be interpreted, or how the measures are related to each other. For example, a public library could select measures to demonstrate that it was converting inputs into outputs efficiently and it could then use customer surveys to show that existing customers liked what they were being given. Shown only this data a funding agency would likely accept the library manager's assurances that all was well with the public

library. What would not be shown by the data from these measures is what was being done (or more likely, *not* being done) for all the ratepayers and small business owners who found nothing useful in the public library and so did not use it. Although the selected measures purport to show that all is well in the library, the measures used by the public library may say nothing of the real quality of the organisation.

Libraries are complex organisations and there is a need for models that are capable of reflecting this complexity. The balanced scorecard devised by Kaplan and Norton (1992) offers a practical method for using multiple measures of organisational effectiveness. Though not extensively used in libraries it could provide a comprehensive method of evaluation that encompasses all of the perspectives so far described in this chapter.

2.6.1 The balanced scorecard

The balanced scorecard enables an organisation to select a combination of measures so managers/executives can view the organisation from several perspectives simultaneously. Kaplan and Norton (1992) devised a set of measures that gives senior managers a fast but comprehensive view of all aspects of the business. They likened it to the dials in an aeroplane's cockpit that allow the pilot to view complex information at a glance. To achieve speed of access they recommend using 20-25 measures (Kaplan & Norton, 1996). To evaluate complexity they suggested there were four basic questions that any organisation needed to answer.

- How do the customers see us? (customer perspective)
- What must we excel at? (internal perspective)
- How do we look to the shareholders? (financial perspective)
- Can we continue to improve and create value? (innovation and learning perspective)

They produced a model with each part of the balanced scorecard linked to each other part, with the exception of the 'financial perspective' which does not connect to the 'innovation and learning perspective'. The first model from Kaplan and Norton was designed for the private sector and it assumed that innovation drove internal processes and customer service (both needed continual improvement), and ultimately everything led to the organisation being profitable. Rather than simply relying upon financial control as the ultimate measure, the balanced scorecard places strategy at the centre of things. This re-emphasises the crucial importance of strategic planning in every organisation, with setting the mission and key objectives an essential part of any scheme to evaluate performance.

Four broad aspects of the organisation's performance can be compared to methods of evaluation described in this chapter.

1. The *customer perspective* can be likened to customers with information needs in the Hillingdon model (Bird, 1981) in which effectiveness was the ability of the library to meet those information needs (section 2.3). It is similar to Kroon's 'quality as expectations' (1995) and service quality typified by the Hernon-Altman model and other variations of SERVQUAL such as LibQUAL+ (section 2.4). The LIS service quality literature states unambiguously that if the customer says the service is poor, then it is poor, and management needs to know this.
2. The *internal perspective* is a focus on what happens within the organisation itself. This has basic similarities with system inputs and the organisation's efficiency in turning inputs into outputs (section 2.2), and with evaluation methods using organisation costs as a measure, such as contingent valuation (section 2.5). In the balanced scorecard the organisation must care about what people think of it, so there is an element of Kroon's 'market perceived quality' (1995) in this, too. It isn't just efficiency in producing outputs; it is how 'good' people perceive those outputs to be in comparison with other organisations.
3. The *financial perspective* is easily comparable to Kroon's strategic quality (1995).
4. The fourth part of the balanced scorecard is unusual, and there is little else in the literature of effectiveness that can match the *innovation and learning perspective*. This could lead to some enlightenment for library managers. If innovation and learning has been so little emphasised in the literature so far, what is the driver of change in libraries – if there are any?

2.6.2 Measuring with the balanced scorecard

The balanced scorecard describes significant aspects of the organisation that must be evaluated, but it does not specify exactly how these aspects should be evaluated. Most commonly, it has been accepted that the balanced scorecard can be evaluated by using performance measures (Niven, 2002).

This chapter has emphasised the importance of listening to the customers, so the next section will examine the balanced scorecard's 'customer perspective' in more detail. In the view of Kaplan and Norton customer concerns fall into four categories: time, quality,

performance and service, and cost. These define the value proposition the organisation applies to customers with the intention of generating more business.

- *Time* could be the time taken to fulfil an order, or the time it takes to get a new product to market.
- *Quality* is a measure of product defects as perceived by the customer, and also aspects such as the accuracy of delivery forecasts.
- *Performance and service* measures show how the organisation's products and services create 'value' for its customers.
- *Cost* to the customer includes specific charges but could include opportunity costs.

Apart from *cost* all the elements in the customer perspective can be matched with measures already proposed for assessing library performance. A description of the match between the balanced scorecard and other methods of library evaluation follows in the next four paragraphs.

Time taken to deliver a product or service is included in lists of statements developed for evaluating service quality, e.g. 'you do not have to wait more than a few minutes for service' (Hernon & Altman, 1996, p. 123). The broader measure of time taken to bring a product to market has never been included in library performance measurement but it would be interesting to examine the speed that resources using new technology (e.g. podcasting) were introduced into libraries.

On the second matter of *quality*, the definition used by Kaplan and Norton is similar to 'conformance' commonly used in TQM, and it is Kroon's 'conformance quality'. In a service quality survey this might be tested by a statement such as 'I can access databases when I need them and not be affected by server downtimes'. An analysis of database logs could reveal if there had been problems with access, and these could be matched to a service standard.

On *performance and service*, Kaplan and Norton are using the same concepts of service that are evaluated directly by the SERVQUAL approach, particularly as it was first interpreted by Hernon and Altman (1996).

Libraries, especially those in the public sector, do not consider *cost* as in charges to customers as a major issue, though in New Zealand this has had to change with more

service charges being introduced. A service quality survey can assess the impact of costs with statements such as 'The library provides computer printing at a reasonable cost'.

In summary, there is nothing in Kaplan and Norton's conception of 'the customer perspective' that can't be evaluated with a SERVQUAL-type customer survey and then compared with data gathered from sources such as the library's circulation system and database logs.

Knowing what the customers expect is useful management information, but to be useful it must still be translated into business processes that have the greatest impact on customer service. That is where the second of Kaplan and Norton's perspectives is best used: the 'internal business' perspective. It is primarily about internal operations and that, in turn, is about processes designed to achieve the desired outcomes set by the organisation. These 'processes' are close in essence to the internal view of the organisation described by Cameron (1978, 1981) and used in this research (Chapters Three to Seven). Because this is the perspective most closely associated with internal processes, the Six Sigma method could be used: "Six Sigma tools can be applied to analyzing the key measures that are captured in the Balanced Scorecard" (Wilson, Del Tufo, and Norman, 2008), though no libraries appear to have done so to date.

The 'financial perspective' does not translate directly to a public sector organisation, yet public libraries are directly accountable to a funding body. Managers must know the financial situation of the organisation for they will be held to account for over-spending. In a simple sense this is just about inputs and outputs. What is more directly relevant occurs when a funding body takes a proactive interest in the organisation and sets out the services and products that it wishes to 'buy' though its operational arm. In this sense the local government authority as the funding agency is a stakeholder of the organisation. Chen, Yang, and Shiau (2006) report on using the balanced scorecard in Korean higher education, and argue that the financial perspective does have relevance to a non-profit organisation. In higher education it might mean gaining more revenue from tuition fees, better asset management, or reducing human resources costs. To a non-profit organisation that can't or won't charge for its services, the financial perspective might mean focusing on donors as targets and gathering more revenue by better fundraising (Kaplan & Norton, 2001).

The last of the balanced scorecard perspectives, 'innovation and learning' is not directly compatible with any of the concepts proposed in this chapter. Innovation and learning is an organisation's ability to innovate, improve, and learn what is relevant to its success. Meeting customer expectations and staying within budget are desirable outcomes, but they need to be sustained and no organisation can do that continuously unless it puts effort into improvement. While library managers might recognise the need for a learning organisation and for continuous improvement, it is rare for any library to measure specific improvement goals.

2.6.3 The balanced scorecard used in libraries

The literature review found two published case studies of libraries implementing a balanced scorecard for measuring performance. Their experience offers insight into the value of the balanced scorecard for evaluating a library.

The University of Virginia Library (UVL) wanted better control of its statistical operations. Using the balanced scorecard they reduced the number of metrics in use and at the same time made it possible to display results as a series of pie charts, making the data easier to interpret. Self (2003) commented on the development and final selection of a parsimonious set of measures at UVL. First, existing planning documents contained general objectives that were useful as guidance but were not sufficiently specific to be converted to a measure, e.g. "Enrich orientation services …", but because the library management did not want to lose sight of these objectives they had to find a way of objectifying them. Second, the library's priorities lacked balance, which caused a problem because it is antithetical to the balanced scorecard's purpose of offering a well-rounded view of the organisation as a whole. Self says that the written objectives gave much attention to customer services but comparatively little to finance, internal processes, and learning (p.59). To meet balanced scorecard requirements, metrics had to be developed for all three aspects of management. The chosen metrics also had to show balance in other ways, such as the mix between lagging indicators (outcomes) and leading indicators (performance drivers), (see Kaplan & Norton, 1996, p. 32).

The actual metrics selected at UVL are a mixture of the predictable and the new. For 'customer service' the first metric is based upon results of a survey in which the unsatisfactory measure of 'overall satisfaction with the library' is used. A specific metric

asks students if bibliographic instruction classes were useful to them. Another metric counts the year to year attendance at special collections events.

Internal processes at UVL are assessed in different ways. As an example, library staff are surveyed and asked to rate the performance of library units that serve internal customers (e.g. human resources, budget, or communications). This gives the internal stakeholder view of the library's effectiveness (section 2.3)

The financial measures used at UVL look at funding directly from the State of Virginia and from other sources. Other data is gathered on unit costs of serial use (both electronic and paper). One metric that Self says was controversial is a comparison of the cost of monographs that circulate with total monographic expenditures (p. 61). This measure not only collects data on money spent, but it also assesses the effectiveness of book purchases based on the assumption that use can be equated with effectiveness. This and other similar measures were controversial because some staff used the traditional argument that the 'right' books should be purchased whether they get read or not, which is similar to a point made in section 2.5 that materials selection made for the long-term is a 'value'.

It is rare to find a measure for 'innovation and learning' in a library. UVL library staff and departments are encouraged to devise a learning plan each year, though this is hardly a specific measure.

The second case study in the literature is a collaborative project between the University and Regional Library of Munster, the Bavarian State Library, and the State and University Library of Bremen. The managers selected only twenty indicators based on the balanced scorecard. The indicators complemented each other and were closely related to strategy (Poll, 2003). In this case most of the indicators are predictable, such as the user satisfaction quota, and the incidence of 'use' per member of the primary user group for 'customer service'. One different indicator is the 'ratio of opening hours to demand" which reflects the importance that customers place upon opening hours (see Chapter Six). By contrast, another indicator of 'customer service' is "the proportion of log-ins to electronic services from outside the library to the total number of log-ins"; it is hard to see how this reflects any aspect of customer service, and it doesn't appear to tell us anything about effectiveness. The financial data collected can be useful for assessing efficiency, such as "library costs for each case of use". Similarly, some of the 'internal perspective'

indicators are useful for evaluating efficiency but less useful for effectiveness, e.g. "staff productivity: processes handled per person, per year", and "the number of stages involved in providing a product unit". Finally, the area on innovation and learning includes four indicators, though they are only peripherally measures of innovation and learning.

It is perhaps odd that no library as yet appears to have used the second model devised by Kaplan (2001) that is specific to non-profit organisations. Again, the innovation perspective drives the internal processes perspective. This is turn leads into both the financial perspective and the customer perspective. Kaplan assumed that the financial perspective cannot be the end point of the non-profit organisation's actions. Both the financial and customer perspectives, though, are driven from 'the other side' by the organisation's mission. It is the mission that drives the organisation's strategy, and that is what is being tested by the indicators in the balanced scorecard (Kaplan, 2001).

Matthews (2004) suggested a variation of Kaplan's non-profit model specific to libraries. He added an 'information resources perspective' at the same level as the financial and customer perspectives. The new concept feeds and is in turn fed by both the financial and customer perspectives. The logic is simple, for a library can only purchase or subscribe to what it can afford, and in turn the library should be purchasing materials needed by its customers. The impact of collection development on the effectiveness of the library is not immediately obvious because the collection is essentially passive. It is there to be used by the customers, and there is no doubt that collection *use* figures are valuable as output measures. But it is fair to ask if customers really care about how many volumes there are in the collection, for each individual only cares if the library can provide access to the materials he/she needs at precisely the time he/she wants them. This point is seen clearly in the service quality work of Hernon and his colleagues (Hernon & Altman, 1996; Hernon & Calvert, 1996; Hernon, Nitecki & Altman, 1999).

The intention of Kaplan and Norton was to focus on indicators with strategic relevance. They designed the balanced scorecard so that strategy and vision were at its centre, not financial control (Kaplan & Norton, 1992, p. 79), with measures that concentrate attention on the overall vision. In that sense the metrics of the balanced scorecard are close to the performance measures of effectiveness described in section 2.4, in which the library evaluated its ability to achieve its objectives as set by key stakeholder groups.

2.6.4 Summary of the multiple view of effectiveness

The balanced scorecard method was designed to be used as a part of a comprehensive planning and evaluation framework. Within this context it "provides a useful framework for achieving an overall view of library performance, helping to ensure that no area is overlooked and that managers focus their effort where it is most needed" (Brophy, 2006, p. 164). In one library the balanced scorecard raised awareness of the need to evaluate diverse elements of the library's operations: "We now look beyond customer service, realizing that success in the other categories (finance, processes, the future) ultimately improves service to our customers" (Self, 2003, p. 104). This section has shown the similarity of the components of the balanced scorecard with alternative evaluation methods described in earlier sections of the chapter. The customer perspective is similar to evaluations of service quality and of effectiveness, and the internal perspective is close to measures of efficiency and of value. By representing several different types of evaluation within one tool, the balanced scorecard has the potential to provide an efficient method of library evaluation. The balanced scorecard has its limitations. "It gives a snapshot of organizational health; it does not give a three dimensional picture" (Self, 2003, p. 104). It identifies problems but doesn't solve them. The conclusion drawn here is that the balanced scorecard is a useful means of library evaluation that can focus attention on some aspects of the library's operations that could be overlooked, and it provides an efficient method of evaluating the whole operation. Yet it does not offer anything really new that can not be evaluated by other means.

CHAPTER THREE

Performance Measurement and Library Effectiveness

In Chapter Two it was stated that the early theoretical work by Orr (1973) led to the publication by the Public Libraries Association (PLA) in the U.S.A. of *Performance Measures for Public Libraries* (De Prospo, Altman, & Beasley, 1973), and that though this sparked some interest in library measures, there was little progress in practice for many years. There remained a weakness with measures that was identified by De Prospo (1982); "Measurement is dependent on how well that thing to be measured is conceptualized. The poorer the conceptualization, the poorer the measure and consequently the less effective the endeavour." Much of the early work on performance measurement in libraries was based on the researcher or practitioner's own concept of what made a library effective. The work often failed to investigate and even show cognisance of the views of those working in the library or those who used the library's services. These were the people required to put the new evaluation methods into practice, but usually the proposed new measures did not seem to relate to what these people were trying to achieve. The research was alienated from the perception of the providers, and yet it is equally true to say that the information providers had not developed clear views on what they were trying to achieve, let alone measure.

Because there was such a gap between the demand for performance measures and the understanding of library effectiveness to which they needed to relate, in the late 1980s and early 1990s some researchers began to think about a method for connecting the two. This chapter describes the development of a method for determining library effectiveness that was initially used in the United States and later improved in New Zealand while the author conducted the research with Rowena Cullen described in Chapters Four to Seven. What follows in this chapter is the rationale for the method (Calvert, 1994).

3.1 Connecting to Effectiveness

While under pressure in the 1980s to produce evidence that libraries were worth the money that was being put into them, some library managers responded by producing different measures of performance. Sets of measures grew in number, and the situation was

exacerbated by the development of many new activities and services within libraries often associated with new technologies, e.g. online database searches. Soon there were so many measures to choose from that none gained any widespread acceptance among practitioners. The measures used in New Zealand mostly derived from British practice (Thompson, 1986). Few, if any, were the result of an analysis of public library purpose as a whole. There was no research into the fundamental activities underlying library performance. Why, for example, did all libraries measure total circulation of materials but never (just as an example) the distance between the library building and its nearest access by public transport? There was no means of establishing if the activities being measured were of any use in determining "the actions, and organizational and environmental characteristics [that] distinguish effective from ineffective organizations" (Childers & Van House, 1989b, p. 276). As a result, library managers of the time had no way of knowing what library effectiveness meant in practice.

Without a coherent method being used to develop sets of measures, librarians could not tell the management or the funding agency anything significant about the overall performance of the library. What was necessary was some way of defining library effectiveness so that performance measures could be tied to it. Lynch (1983) defined performance as "the doing of something, an activity" and effectiveness as "something which does well that which it is supposed to do". The crucial difference between the two is that performance can be the doing of an activity in an abstract environment while effectiveness clearly depends upon the activity having a social context. There can be no effectiveness in a vacuum where nothing has a purpose. All libraries have a social context because they have been created and are funded by society to fulfil a purpose. Childers and Van House (1989b: Van House & Childers, 1990) stated that it was necessary to re-examine the differences between measurement, performance and effectiveness, but crucially, they introduced the Multiple Constituencies model of organisational effectiveness to library science. This model was appropriate because it takes into account the social context of the organisation. It recognises that because libraries are social constructs they depend for their existence upon several different communities. Libraries, it follows, must take their view of effectiveness from a much wider range of opinions than just those of the library profession.

3.2 Libraries as a Social Construct

Society, however that might be defined, provides the justification for the existence of libraries, for without society there would be no context for their purpose. Libraries have not always existed and it is not beyond the bounds of imagination to suppose that one day they will cease to exist (and some writers have predicted that very eventuality), so it is simple to see that they are the creations of a time and a place, and the libraries so far created happen to suit, to a greater or lesser degree, the needs of current society for information collection, storage, organisation, and dissemination. Libraries exist because society wants them to exist and some people within society have made hard political decisions to fund them. Libraries are thus social creations.

One of Van House's initial research objectives was to find "the definition of the concept, or construct, of library effectiveness" (Van House, 1986). 'Construct' is an interesting word because it suggests the activity of building, or creating, has taken place. Whereas 'concept' can be purely abstract, a construct necessarily involves active participation by an individual or a group of people. If this is taken further, the implication is that whilst a concept is unlikely to alter through time and space, a construct will probably be different at different times and in different places. The construct is very much a social creation and needs to be investigated as such. Public libraries are social creations. The earliest New Zealand public libraries used a construct from Western European and North American societies in the middle of the nineteenth century. A specific example is the Nelson Public Library, which had its origins in the collection brought by the first English settlers to Nelson on the ship the *Whitby*. The library was already formed before it had even reached New Zealand shores (Stafford, 1992).

There is an extraordinary contrast between the public library construct of the 19th century humanists and that of the public libraries in the Third Reich, in which political objectives surpassed all others. What was the prevailing construct? "Perhaps most fundamentally, they abjured the western tradition of humanism with its emphasis on the individual, although library service is inherently individualized. They scorned neutrality, a concept with many direct applications to the practice of librarianship" (Stieg, 1992, p.21). So, if the Anglo-American construct of public libraries could be turned on its head so easily, does it have any permanence? The conclusion must be in the negative. So whenever research examines library effectiveness, it is essential to realise that some elements will be relevant only to a specific time and place, e.g. to New Zealand in the 2000s. Library

effectiveness is thus part construct and part concept, and having established effectiveness once it cannot be assumed that it remains stationary for all time.

3.3 Theories of Organisational Effectiveness

The conceptual difficulty of judging the performance of libraries has turned some researcher's attention to theories of organisational effectiveness within the general theory of management. Research carried out by Childers and Van House (1989b; Van House & Childers, 1990) attempted to produce an empirical basis for the identification of dimensions of performance and the selection of key performance indicators in public libraries. Their work is the basis of the research reported in Chapters Four to Seven.

An examination of the recognised models of organisational effectiveness can help with the perception of underlying models of organisational effectiveness on which previous concepts of performance measurement have been based. From this conceptual basis it is possible to identify useful models for libraries in New Zealand; establish a clearer concept of what organisational effectiveness is; and perhaps find a starting point from which to develop performance indicators that will be more useful and practical in evaluating services. There are four models that are generally recognised in the management literature and each closely relates to established thinking about the measurement of performance in libraries.

3.3.1 Goal Attainment model

The first model is usually called the goal attainment model, sometimes referred to as the rational goal model, the rational systems model, or goal-oriented model. In this, the organisation defines its goals and objectives, and attempts to measure the extent to which these have been fulfilled. Goals and objectives will be defined in terms of what the organisation sees as its role in the community, and the domain in which it operates. It is, of course, necessary that the organisation's managers agree on the goals and that they are both attainable and measurable. The focus in this model is on strategic planning, high productivity, and objectives expressed in terms of quantifiable outputs. The Public Library Association (U.S.A.) based its *Output Measures for Public Libraries* on this model (Van House, McClure, Zweizig, & Rodger, 1987). The goal perspective is also reflected in *Planning and Role Setting for Public Libraries* (McClure, 1987) and *Planning for Results* (Himmel & Wilson, 1998). The limitations of the model lie in the fact that the goals may

be achieved at the expense of other aspects of organisational effectiveness, and that agreement is not always reached about the relative importance of the goals. The model is, however, inherently attractive, especially to funding agencies, and has held an important position in the field of performance measurement for some years.

3.3.2 External Systems model

The second model, sometimes called the systems resource model, is concerned with the ability of the organisation to secure needed resources from its environment. This model stresses the interdependence of the organisation with its environment and assesses its effectiveness in terms of its ability to secure resources in order to respond to the demands of that environment. Input-based library standards rely on this model of organisational effectiveness, since they are primarily concerned with securing funding, buildings, staff and materials, and less with whether these are utilised to provide effective service. In this model it is taken for granted that if management can secure the desired inputs then effective service will follow quite naturally and doesn't need to be measured. It makes the assumption that management can convert the inputs into effective service because they are experienced professionals. The external systems model tends to emphasise growth over all other factors and because of this it was appropriate when it was most in favour. This was especially so during the period of rapid growth in public services after the Second World War, and particularly in the 1960s and early 1970, when public libraries in New Zealand were given the money to build new facilities, and expand the collection and total numbers of staff. During times of retrenchment, such as the 1980s, it has proved less popular with managers, and few would now wish to use input figures as the sole measure of a library's worth, simply because it would only inconsistently show the library in a good light.

3.3.3 Internal Process model

The third model, sometimes called the internal systems, or natural systems model, is concerned with the organisation's internal processes, of which goal-setting and achievement are only a part. In addition, many of the organisation's goals will be focussed on means rather than ends. The organisation's internal well-being (which can be called 'health'), its internal communications, and its efficiency in transforming inputs into outputs, are also prime measures of effectiveness in this model (Matthews, 2004, p. 15). Stability and equilibrium, and internal control processes are favoured as the organisation seeks to maintain itself as a unit. Management information systems are based primarily on the internal process model with their concern for internal processes and communication, as

are concepts of organisational effectiveness that stress survival of the organisation as the prime measure of evaluation. Some of the performance measures used in New Zealand libraries, measures of internal control, and efficiency in technical operations, are also based on this model, but they tend to overlook the need for accompanying measures of organisational well-being that contribute to the organisation's ability to function well and to fulfil its purpose. Concentrating only upon internal processes can distort the evaluation of effectiveness. Moullin (2004) uses the United Kingdom's Star Rating System for acute hospitals as an example of a set of measures that is hopelessly off target. He says that one episode of the BBC comedy series *Yes, Minister* featured a fictional hospital with over 500 administrative and ancillary staff, but no medical staff and no patients. This hospital, he says, would have scored better on nine of the ten measures used in the Star Rating System than all real hospitals.

3.3.4 Strategic Constituencies model

The fourth model, also called the Multiple Constituencies model, assesses the organisation by the degree to which its constituents have been satisfied. The organisation is viewed as a social construct that has many stakeholders to whom it has a responsibility; each stakeholder has a 'stake' in the organisation and its success, and each has needs and expectations that the organisation must attempt to meet. As a generalisation just to explain the nature of stakeholders: funding agencies will want to see productive use of the money they put into the organisation; providers (the staff) want to provide a good service but also look for good working conditions and job satisfaction; the customers seek what all customers everywhere want, the ready availability of products they wish to find and good service quality while they seek them. These needs and expectations will inevitably vary, and they will not be easily predictable, so the organisation that has identified stakeholder expectations and then been able to deliver performance that meets what the stakeholders want, has achieved organisational effectiveness according to this model. Perhaps the least obvious of the three stakeholders mentioned above is the staff who provide the service, for they could be said to be there only because they are being paid, and so are disinterested. This is not so according to Moullin (2004, p.111) who says "Measures that are seen by staff as irrelevant, unrealistic, inappropriate or unfair will be counter-productive." He goes on to say that staff should be involved in determining the measures used, or else they might subvert the management's original intention for the measures. They certainly have the power to do so, if they wished.

3.4 Combining the Models

Stakeholder groups do not always share the same expectations, however, so the organisation must find ways of reconciling and balancing them. One of the ways of doing so is by aligning the Multiple Constituencies model with other models of organisational effectiveness. This model is particularly appropriate for organisations in the public sector that are accountable to their funders, to their customers, and to other interested parties, including the organisation's professional and paraprofessional staff. In the absence of any empirically based universal concept of effectiveness the ways in which each of these constituent groups judge the effectiveness of the organisation will form the basis for the organisation's own assessment of its effectiveness. An advantage of the Multiple or Strategic Constituencies model is that it focuses the organisation's attention and planning efforts on the groups in its environment without which it cannot succeed. There are few measures of library and information services that have built directly on this model of organisational effectiveness, although some are directed at the influence of different constituencies upon the organisation. The expectations of funding agencies, the different customer groups, staff, support organisations and professional organisations must be taken into account when setting the organisation's goals. The extent to which they are met will affect the organisation's interaction with its environment and its ability to obtain resources from that environment. This model cannot be used alone as a construct for measuring organisational effectiveness because it must be used in conjunction with the other models described above to ensure that no constituency is overlooked when setting organisational goals, in setting up processes for internal monitoring, and in gaining resources from the community.

3.5 Searching for a Research Methodology

Although the specific methodology used in each stage of the research is described in the separate chapters that follow (Four to Seven), the general method will be described here. The first step was to formulate questions that needed answers.

- What is an effective library in New Zealand?
- How can we recognise an effective library?
- What factors make such a library effective? (Based on Van House, 1986)

The literature review uncovered one piece of research that looked highly appropriate for answering these questions, the Public Library Effectiveness Study (PLES) of Nancy Van House and Thomas Childers (Childers & Van House, 1989a, 1989b; Van House & Childers, 1990). This work was largely based on the Multiple Constituencies model, although it also tested the applicability of all four models of measuring organisational effectiveness.

The methodology they used is derived from previous studies of organisational effectiveness within not-for-profit organisations, which had shown effectiveness to be multidimensional. This, they found, had not been addressed by previous research into library performance, and in how measures had been developed. Their research supports the view that inherent in the perceptions of library effectiveness held by key constituent groups are four recognisable models of organisational effectiveness. They concluded that preferred indicators relate to the goal attainment model, the internal processes model, the external systems model, or the Multiple Constituencies model, and that a comprehensive set of performance measures for libraries should do likewise.

The methodology draws upon the work of Cameron (1978, 1981), which is based on an analysis of subjective perceptions of organisational performance of internal participants. Cameron's methodology, developed in the field of higher education and used initially to examine concepts of effectiveness in 48 institutions of U.S. higher education to develop a reliable instrument for assessing effectiveness, has since been tested by others (Jobson & Schneck, 1982; Kleeman, 1984; Rush, 1988), by Cameron himself in a longitudinal study examining changes in effectiveness over time (Cameron, 1986), and in a wider range of institutions (Cameron & Tschirhart, 1992). In all of Cameron's studies the same dimensions of effectiveness can be derived from an analysis of results using the same instrument, which implies that the methodology is remarkably robust.

In the Multiple Constituencies model the public library is viewed as an organisation with various 'stakeholders' who all have different concepts of the purpose of the library and who have different expectations for it. The library must, in this model, measure its effectiveness by evaluating the extent to which the expectations and demands of the different constituencies are met. The questions to be asked next are:

- What are the main constituencies of the New Zealand library?
- What are the expectations of each identified constituency?

- How well are these expectations being met by the library?

And finally:

- How can we develop performance measures that reflect this model of organisational effectiveness?

The terminology used in the PLES and in the New Zealand research needs some explanation. Individual aspects of library performance that can be identified and can be used as the basis of measurement are called (for the purposes of the research) 'indicators'. Operationalised scales of measurement, based on these indicators, are called 'measures'. Further, groupings of indicators may all relate to the same overall aspect of library performance, e.g. document delivery, or access to the collections, and this may help to derive a broad 'dimension' of performance. The dimensions are larger constructs useful for measuring effectiveness because there will likely be a manageable number of dimensions to measure, as opposed to potentially hundreds of separate indicators. It is much easier to measure the organisation's success against ten dimensions than one hundred indicators.

The method for arriving at the dimensions is as follows. Taking a very broad view of 'what is done by the library' the researchers can gather together, from the existing literature and from actual practice, a large number of separate indicators that each examines one specific aspect of library service, e.g. the 'speed and accuracy of reshelving books', that is known to be relevant to the quality of service as it is experienced by library customers. Because the intention is to examine library effectiveness rather than only customer service, indicators can also assess other aspects of library performance, including management, e.g. the 'number and quality of written policies and standards'. At this point no attempt has been made by the researchers to determine the actual dimensions of library effectiveness. That is done by using the indicators as a means of discovering what the members of the stakeholder groups consider is important to *them* when judging the performance of their public library. Cameron found that the majority of respondents will, in all likelihood, give similar responses to indicators that they judge to be close together in what they are assessing (1978, 1981, 1986). So, if the respondents give similar responses to indicators such as the 'extent of public involvement in decision making' and the 'frequency of evaluation of planning' then it is reasonable to assume that the two indicators are expressing roughly the same thing – at least in the opinion of the stakeholders. When

several indicators all appear to be representing the same broader view of the library, then it can be said to be a dimension of effectiveness. By this means, the underlying concepts of effectiveness can be revealed. This revealing of dimensions of effectiveness is what had never been done before, and perhaps why all previous sets of indicators had failed to capture the attention of practitioners – did the practitioners intuitively realise that the indicators appearing in sets of performance measures represented only the views of the people who had created the lists?

There is another benefit that arrives with this method. Instead of a completely top-down approach in which the creator of a list of measures simply starts with a broad view of library operations, then decides which aspects of the service will be assessed, e.g. staffing, the building, and service outputs, and then writes several indicators for each of the broader aspects, this method starts at the highest level but then moves immediately to the lowest level (the indicators). Then by collecting the views of stakeholders on all the indicators, forms them together into the mid-level dimensions of performance. It is, therefore, based upon empirical evidence rather than mere opinion. It can also be said to be inductive rather than deductive because the reasoning formulates a general conclusion from a set of premises based mainly on experience or experimental evidence.

One benefit from the formulation of empirically-based dimensions is that the number of dimensions is known and this will aid in the production of a parsimonious set of measures.

Indicators ⇢Dimensions ⇢Measures

Once a dimension is known then only a few indicators, perhaps only two or three, need to be used to assess the library's performance on that general aspect of its services and operations. If the actual measurement shows a good level of performance on two or three measures for the dimension, then it is highly likely that the organisation is performing well on the whole area covered by the dimension, but if it is performing poorly on the selected measures for the dimension, it is highly likely it is performing poorly on the whole area covered by that dimension. As an example, if the research induced a dimension of 'staffing quality' and it was decided that a suitable indicator was the 'level of qualifications of staff', then if the library does well on that measure it is likely that it is doing well on the whole dimension of staffing quality, and the opposite also holds true. More explanation of this process will be provided in Chapter Five.

The following four chapters are case studies describing the application of this method for the development of performance measures for public and academic libraries. Two describe research into public library effectiveness, and then two more describe research into university library effectiveness.

CHAPTER FOUR

Effectiveness in Public Libraries

The objective of the New Zealand Public Libraries Effectiveness Study (NZPLES) was to define the concept of public library effectiveness as it was expressed by selected key constituencies, or stakeholders; to identify broad dimensions of performance for which critical indicators could be established; and to develop a parsimonious set of performance measures with which to measure public library performance against the key indicators. A secondary objective was to compare the results with those of studies done in the United States to see if underlying concepts of effectiveness applied in more than one country. The research was conducted in two stages. The first, described in this chapter, investigated concepts of effectiveness in the main constituencies of New Zealand's public libraries; the second (described in Chapter Five) established broad dimensions of public library effectiveness.

4.1 Method

The New Zealand study used the same methods as the American PLES (Childers & Van House, 1989b; Van House & Childers, 1990). Their definitions of the terms - indicators, measures, and dimensions - were used unaltered. Individual aspects of library performance, as described in the statements used in the survey instrument, are called indicators, and they are the smallest elements in the study. The methods used to quantify and scale indicators are termed measures, a relatively simple term to define. The third and more difficult concept is to identify a "broad aspect of an organisation that is monitored in assessing effectiveness" (Childers & Van House, 1989b, p. 276). When a number of indicators reflect the same broad aspect of library performance they are deemed to fall into a dimension, and identifying the dimensions of public library performance was one of the objectives of the NZPLES study.

4.1.1 Statements

The first step in the NZPLES was the creation of a list of statements that described public library performance. The two most important sources for these were the library and information science (LIS) literature and measures already in use in New Zealand public

libraries and in the *Standards for Public Library Service in New Zealand* (1988). This gathered a list of over 500 indicators, but this large list could be reduced by deleting duplicates or measures that examined almost exactly the same aspects of performance. After the list was condensed there were still 95 indicators representing the different aspects of library performance, and they were grouped under broad headings (Library services offered, Events/activities, Library match with community, Service outputs, Materials/stock, Access to information/materials, Staff, Buildings, and Management quality). Grouping the indicators enhanced readability and ease of comprehension; for example, the indicator 'Adaptability of organisation' is more easily understood when placed in the broad grouping of indicators headed Management quality than if it were in an unordered list. At the time of this study it remained an open question whether this sort of grouping unduly influenced respondents or if it increased response rates. The latter without the former would be desirable, but it could be that respondents identify one broad grouping which they consider most important and give high scores to all indicators in that list. This was contrary to the intention of the research, which was that reactions to each separate indicator should help the construction of the dimensions of effectiveness. In subsequent research with university libraries, the list of indicators was left unsorted, with no apparent difference in responses (Chapters Six and Seven).

4.1.2 Stakeholders

It can be problematic to determine the essential stakeholder groups in a public library. There is no international norm for the government of public libraries. In New Zealand the public libraries are a responsibility of local government: a city, town or district council elected by citizens of that area, and this is also true in the United Kingdom. In the United States of America the controlling body might be a library board, a city council, or a county board of supervisors. By contrast, public libraries in Singapore are run directly by the national government through the National Library Board. The method used to select stakeholder groups for the NZPLES differed to that used by Childers & Van House (1989b). New Zealand did not have obvious equivalents to the seven major constituencies of U.S. public libraries in that study. For example, New Zealand libraries do not have trustees, and only a few libraries (at the time) had a Friends-of-the-Library group. In the New Zealand study it was decided to treat all library staff as one constituency because many New Zealand libraries have a small and almost homogenous staff, and often qualification is not a significant differentiating factor. New Zealand public libraries are funded and managed within the government structure of local body councils, a committee

of elected representatives overseeing a permanent bureaucracy. Library managers report to second-level managers within the council organisation, who report to a Chief Executive Officer. For these reasons the NZPLES used only three key constituencies: librarians (the providers), councillors (the funders), and customers (the actual end-users of the services provided). At the time of the survey there was debate about matters such as charging fees for council services, the reduction of services to save money, and matters such as staffing levels. Consequently it was anticipated that the three chosen constituency groups might have widely differing expectations of an effective public library.

At the time of the research, and subsequently, there have been questions asked about the selection of the stakeholder groups. The most common questions have been about the use of registered borrowers (people appearing on the library's borrower database) as representative of the user stakeholder group, and why non-users were not included. The use of names on the library's database is purely pragmatic. To achieve the response rate desired there had to be some means of reaching large numbers of users so it was believed that a postal survey was the only way of doing this. Leaving survey forms on a desk in the library so that those active customers who use the library but do not borrow books (and so would not appear on the database) might reach a few people but the practical aspects of distinguishing between who had responded in-house and who had responded by post would pose huge problems. A more significant question is why only users were considered as stakeholders and not non-users. A stakeholder is a person with a stake or some form of ownership in the organisation. Active customers have a stake because they use the products and services provided and so can comment on how they respond to the service they receive. Non-users would not be able to do this, and so do not, in the strict sense of the term, have any ownership of the public library. The other question directed to the researchers was why only elected councillors were included as the funding agents when in practice many decisions are made by council officials who are employed by the local government authority and who are not elected. In this case the criticism has some validity because these officials often formulate details of policies that are then presented to the councillors for approval, though ultimately it is the elected representatives who make the decisions. It would be interesting to ask the council officials the same questions that were put to the councillors to see if there is any divergence of opinion between them. In a U.S survey conducted in 500 communities, library directors and public officials differed significantly in their perceptions of the public library and its value to the community it served. According to the local government officials the public library provided a lower

return for tax dollars spent than other services (Estabrook & Lakner, 1995). Would the same difference of opinion appear between council officials and the elected councillors? It would take another research project to answer that question.

4.1.3 Data collection

Having selected just three stakeholder groups for the investigation, the next step was to select suitable public libraries for the survey. A full census was a practical impossibility. The best solution was a matrix sample formed with two axes. The first was based on three rough geographical areas, the north of North Island, the south of North Island, and the South Island. This was done because many librarians maintained that there was a difference in attitudes between the north and the south of the country. It was decided to test the assumption. The second axis was a split of libraries by size of population served: 10,000 to 18,000, 18,000 to 30,500, 30,500 to 54,000, and 54,000 and above. It is acknowledged that there is a degree of randomness in the way the populations were selected, but the intention was to produce a matrix and then select one library from each cell of the matrix. The distribution of all public libraries into three geographic groups and four groups based on the size of population each one serves produced a fairly even distribution of libraries into each cell of the matrix. In the resulting matrix of twelve cells, there were no more than eight libraries and no less the three libraries in any one cell. There was a noticeable consistency of around seven or eight in each cell, with only the largest libraries in the South Island having as few as three representatives. Then one library was chosen with a computer generated random number from each cell in the matrix, and the others discarded. Although the potential for generalising the findings was sacrificed by using a structured sample in this way, the method ensured the inclusion of a cross-section of libraries serving city, small town, and rural communities spread across the whole country. This was considered to be an overriding consideration if the results of the survey, which were intended to paint a picture of the varying views of the different constituent groups across the country, were to be accepted as valid by the professional librarian community.

Survey respondents were then selected randomly in each of the three stakeholder groups in each of the twelve selected libraries. This was done in proportion to the size of the library's population base, (i.e. in the large urban libraries, a proportionately larger number of library users, library staff, and councillors were surveyed). In some small libraries the numbers of library staff were so small that it meant that all were included in the sample.

At the other end of the scale, cities often have no more than about twenty councillors, so it was necessary to include them all in the survey. Names of library staff and of councillors are in the public domain. The names and addresses of users were produced by the public libraries but they would not give them to the investigators because of the impending passage of the *Privacy Act 1991*. Every 200th name on the list of users was chosen (by the library managers), and every fifth name on the lists of library staff and councillors.

A total of 1,956 survey forms were mailed out to the selected individuals. The survey consisted of a five page listing of the 95 indicators, though there was only one actual question for respondents to answer, which is given in Figure 1.

Figure 1: The NZPLES stage 1 survey instrument

The questionnaire

Please say how important these things are to you when you are trying to judge the performance of a public library.

Put a circle around one number on each line, Circle number 5 if you think the item is very important. Circle 4 if it is not quite so important, and so on. Circle 1 for the items you think have least importance.

Library services offered	**Most Important**				**Least Important**
Availability of photocopiers	5	4	3	2	1
Availability and suitability of other equipment (microfilm readers, CD players, etc.)	5	4	3	2	1

and more statements follow

4.1.4 Data analysis

Some 886 responses were received (a 43.5% return) and the data entered into the Vax/VMS version of the SAS statistical program. Response rates from stakeholder groups were: users 41.7%, councillors 47.5%, and library staff 73.0%. No follow-up of the initial questionnaire was possible because the investigators did not hold the names of users and so could not check who had not responded.

For each statement it was possible to arrive at the sum of responses. This could be done for all respondents, or any selected sub-section of the responses e.g. all councillors, or all respondents by area. Where the respondent had given no response this was simply ignored in the calculation. Having produced the sum, it was then easy to calculate a mean for all responses within the selected group of respondents. The means could then be ranked in descending order, giving an indication of the importance attached to that indicator.

The survey instrument included a list of indicators of performance with the request made to respondents that they rate each indicator on a point in a Likert scale from 1 to 5. All responses to each indicator were totalled and a mean response calculated. This use of a Likert scale and the calculation of means has been used in the various research studies reported in this thesis. Tables of means derived from Likert scales appear in Chapters Four, Five, Six, Seven, Ten and Eleven. Calculating a mean from the responses assumes that the steps in scale are all equal (numeric data), yet this is not strictly so. If three points were labelled 'very satisfied', 'fairly satisfied' and 'slightly satisfied' the gap between the first and second points is not necessarily the same as the gap between the second and third points. For this reason there must be some reservation about the precision of means calculated from the ordinal data in Likert scales that have been used in the Tables in all the above chapters. To counter this argument it can be said that if used to measure a concept such as satisfaction, then the underlying construct is, in fact, continuous rather than strictly ordinal. Respondents do not verbalise their satisfaction specifically as 56.85%, for example, but their satisfaction can be captured in ordinal form, e.g. 'fairly satisfied', etc. The resulting data is captured in ordinal form but the underlying data is similar to continuous normally distributed data, and that can validly be measured by the methods applied to numeric data, including the mean.

A further test was done on the resulting ranked lists. To test for similarity between ranked lists, a Spearman Rho test for correlation is suitable. This produces a single figure (the Rho) for each correlation. It should be noted that only pairs of ranked lists can be compared in this way, so to test for similarities between the three regions of the country used in the sample it was necessary to make three correlations, (i.e. between the north of North Island and the south of North Island, between the north of North Island and South Island, and finally between the south of North Island and South Island). There were also three tests between stakeholder groups, and six tests between libraries by size of population served.

4.2 Results

Overall interest might lie in the combined views of all respondents from all parts of the country, but it was possible to identify similarities and differences in the rankings of indicators across stakeholder groups, and to identify any possible divergence of views in different parts of the country, and between large and small communities. It was also possible to make general comparisons between the New Zealand results and those in the Childers and Van House (1989b; Van House & Childers, 1990) studies in the United States of America.

Table 1: The top ten indicators by mean from the three stakeholder groups

Library staff

Indicator	*Mean*
Helpfulness, courtesy of staff	4.95
Level of staff morale	4.91
Competence of management	4.86
Match of library services to community needs	4.80
Match of stock to community needs and demands	4.77
Extent of community awareness of library services	4.77
Accessibility of building (ramps for disabled, etc.)	4.73
Range of library services offered whenever library is open	4.72
Ease of use and arrangement of library catalogues	4.70
Quality of reference materials	4.70

Councillors

Indicator	*Mean*
Competence of management	4.79
Helpfulness, courtesy of staff	4.78
Accessibility of building (ramps for disabled, etc.)	4.59
Level of staff morale	4.56
Match of hours open with user needs	4.54
Efficiency/cost effectiveness	4.49
Ease of use and arrangement of library catalogues	4.47
Match of goals and objectives to community needs	4.46
Match of stock to community needs and demands	4.44
Match of library services to community needs	4.44

Users

Indicator	*Mean*
Helpfulness, courtesy of staff	4.77
Quality of books, magazines, other materials, etc.	4.57
Competence of management	4.56
Ease of use and arrangement of library catalogues	4.54
Accessibility of building (ramps for disabled, etc.)	4.53
Expertise of reference staff	4.51

Total stock of books, magazines, other materials	4.47
Level of staff morale	4.47
Match of hours open with user needs	4.46
Total money spent on books and other materials	4.45

Five indicators occur in the top ten as ranked by all three stakeholder groups:

- Helpfulness, courtesy of staff
- Competence of management
- Level of staff morale
- Accessibility of building
- Ease of use and arrangement of library catalogues

Thirteen indicators appear in the top twenty ranked by each group.

From indicators placed further down the rankings, it appears that although councillors emphasise management and efficiency matters they also understand the significance of staff attitudes and morale, and the need to match services to community needs. Councillors ranked three of the five available indicators that relate library performance to community needs in their top ten, whereas the library staff ranked only two this high. Does this suggest that library staff are less in contact with community needs (or believe that their work has less to do with community needs) than the councillors? Users, by contrast, favour a wider range of indicators, perhaps less focussed. In their estimation of importance of a means of measuring the public library, they emphasise quantity as much as they do quality.

When data from all three stakeholder constituencies are combined and examined by geographical area and by size of population, similarities among responses and correlations among rankings emerge. Across all three geographical areas, eight indicators appear in the first ten indicators ranked by all three stakeholder groups. Eighteen indicators appear in the first twenty of all three groups; there is a high degree of similarity. Comparisons of pairs of ranked lists using the Spearman Rho test show very high levels of correlation. To reject the correlation with a list of 95 indicators, a two-tailed test with significance at .10, the rho is .3323. Almost no differences can be ascribed to geographical variation.

	South of North Island	**South Island**
North of North Island	+.976	+.977
South of North Island		+.974

When the data are divided by size of population base served by the library, seven indicators appear in the top ten of all four columns, twelve in the first twenty of all four columns, and seven in the last ten indicators of all four columns. Again, the correlation between all the pairs of ranked lists is significant – indeed, very high.

POPULATION SERVED	30500-54000	18000-30500	10000-18000
54000 and over	+.964	+.959	+.915
30500-54000		+.980	+.941
18000-30500			+.949

4.3 Comparison between New Zealand and USA studies

The methods used by Childers and Van House (1989b; Van House & Childers, 1990) and in the New Zealand study were not precisely the same; the results are therefore not fully comparable. However, the New Zealand study drew upon and almost replicated the USA study (the Public Library Effectiveness Study (PLES)) and the results are analogous.

Correlations between responses of the selected constituencies in the two studies can be compared. Fewer stakeholder groups were used for the New Zealand study (three compared to seven in the PLES), so it might be expected that there would be closer correlations between the stakeholder groups in New Zealand than was found for the seven constituencies in the PLES. This was only partially borne out by results. For the purpose of comparison it is assumed that the Trustees in the PLES is the closest group to that of councillors in the NZ study, because Trustees are involved in the funding and reporting role that the local council fills in New Zealand. In the New Zealand study the correlations were as follows:

Library staff and users	.88
Library staff and councillors	.83
Councillors and users	.85

The correlations from the U.S. study are:

Library managers and customers	.57
Library service staff and customers	.58
Library managers and trustees	.90
Library service staff and trustees	.91
Trustees and customers	.65

The U.S. study shows a high degree of consonance between the views held by library Trustees and both groups of library staff, but library staff have different opinions to the users, and have a lower level of agreement about what is important than the Trustees and users. The U.S. study does not show the same level of coherence as the New Zealand study. New Zealand is a much smaller country both geographically and in terms of population than the United States of America, and it perhaps has a more unified national culture, but the similarity shown between opinions held by library staff and their customers in the New Zealand study compares favourably with that achieved in the USA.

An examination of individual indicators also aids a comparison between the two countries. The Childers & Van House (1989b) indicator 'staff helpfulness' ranked second with Trustees and library managers, first with library service staff, and fourth with customers. In the New Zealand study the indicator 'Helpfulness, courtesy of staff' ranked first with both library staff and customers, and second with councillors. Here is an internationally accepted indicator of library effectiveness.

Managerial competence, an indicator phrased almost exactly the same in both studies, ranked only seventh with Trustees in the U.S. study. It was in the second group of ten indicators when ranked by the three other groups under consideration here. Like Trustees, New Zealand councillors ranked managerial competence more highly than did the other two constituencies in the N.Z. study, though all three stakeholder groups ranked it very highly. At the time of the study, management performance was being scrutinised in nearly all aspects of public governance in New Zealand, which may have increased general awareness.

All four groups taken for comparison in the PLES ranked 'range of materials', 'quality of materials', 'range of services', and 'service suited to the community' among the first ten indicators. In the NZPLES, the equivalent indicators ('Range of types of materials', 'Quality of books, magazines, etc.' 'Range of services when library open', and 'Match of services to community needs') do not rank as consistently high with all three stakeholder groups, although library staff rank 'Match of services to community needs' and 'Match of stock to community needs' very highly. The customers ranked 'Quality of books, etc,' second only to the courtesy and helpfulness of staff. The highest ranking indicator across *all* groups in the U.S. 'hours open' does not achieve such significantly high rankings in the NZPLES, although councillors ranked it fifth. It might be assumed that the library staff are satisfied with the status quo, and if they do not give it a higher ranking of importance,

perhaps users are content as well, though at the time of the study, Saturday morning shopping was still quite new to New Zealand.

4.4 Underlying dimensions

Common factor analysis was used to examine whether indicators (considered as variables in the factor analysis) clustered together in groups suggesting underlying concepts of dimensions of performance. Factor analysis only groups together variables, so the interpretation of the output has to be done by humans. Names given to groups, or dimensions, are only attempts at interpretation of the factor analysis. The number of factors selected (seven) was determined from a scree plot of eigenvalues, and the most parsimonious description was chosen. The seven factors explained only 34.2% of variance, but larger numbers of factors did not substantially increase this value. It is perhaps this low explanation of variance that accounts for the indicator 'Helpfulness, courtesy of staff' not appearing in any of the factors. In the list given below, only those variables loading at the .4 level or above have been included. There is no statistical significance in .4 but is a convention often used in this kind of analysis.

Table 2: Seven dimensions of public library effectiveness from the NZPLES.

Factor 1: Library-community interface

Level of library's contribution to well-being of community (education, recreation, lifestyle, etc.)
Number of visits per demographic group (young, elderly, etc.)
Number of visits to library per year by all users
Number of residents registered as members of library
Total number of residents registered as members of library
Number and quality of library-oriented events and activities
Relations with, and support for, community organisations
Level of library's contribution to free flow of ideas, etc.
Number and quality of cultural events and activities
Average time spent in library by users
Extent of community awareness of library services
Match of library services to community needs
Level of librarians' standing in community
Level of contribution to professional and business sectors
Amount of user education (teaching use of library)

Factor 2: Document/information supply

General speed of service
Speed and accuracy of reshelving of books, etc.

Level of reference service offered (quick enquiry, assistance with research, preparation of bibliographies, etc.)
Quality of books, magazines, other materials, etc.
Speed of processing new items added to stock
Expertise of reference staff
Effective distribution of qualified staff at service points
Suitability, flexibility of loan periods for user needs
State of repair of books, magazines, other materials, etc.
Quality of reference materials
Likelihood material wanted will be immediately available

Factor 3: Input resources

Money library spends per resident per year
Money spent on books, etc. per resident per year
Total money spent on staff
Number of items purchased per year
Total number of items purchased per year
Per item expenditure on new items being added to stock
Total materials processed (purchased, catalogued) per year
Total money spent on books and other materials

Factor 4: Management procedures

Match of goals and objectives to community needs
Extent to which library achieves goals and objectives
Quality of planning procedures (short and long term)
Frequency of evaluation of planning
Adaptability of organisation
Frequency of evaluation of building, programmes and stock
Competence of management
Match of stock to community needs and demands

Factor 5: Human and physical resources

Comfort, appeal of library building
Design, suitability of library building for purpose
Identifiability of building from outside
Accessibility of building (ramps for disabled, etc.)
Number of staff
Level of staff morale
Convenience of building location (near bus stops, parking, etc.)

Factor 6: Intellectual access

Availability of on-line computer information from NZ and overseas databases
Availability and suitability of other equipment (microfilm readers, CD players, etc.)
Extent of information about other libraries' holdings of books
Amount of material borrowed from other libraries in NZ for users (by interlibrary loan)
Availability of photocopiers
Availability of library catalogues throughout the library

Factor 7: Public involvement

Amount of donations of books, etc.
Amount of voluntary assistance from residents
Extent of public involvement in decision making

The first factor contains fifteen variables/indicators that all relate to the library's success in meeting the information needs of the community or the extent of the community's use of library services (but not necessarily the materials). The indicator 'level of librarians' standing in the community' appears in this factor, and though it might have been expected as a indicator of staff quality, the correlation with service and the relationship with the community becomes apparent once the whole factor is seen. Such insights validate the methodology.

The second factor contains eleven variables. Hair, Anderson, Tatham, and Black (1998) proved that the highest loading variable can be used as a surrogate for all the others, so for this factor it is worth noting it is the variable 'General speed of service'. Several other indicators including the word speed also have a high loading, suggesting the speed is considered an important measure of this aspect of public library service. In the third factor, which contains indicators of inputs, the word money appears in five of eight indicators. The fourth factor has eight indicators, of which seven are concerned with planning and management activities. The fifth factor is a mix of indicators, though there are two themes; the library building and library staff. The sixth factor is a motley collection with some connections with adequate access to information resources or information retrieval (online access, microfilm equipment, access to catalogues, etc.). The last small factor is identifiable as public involvement with the library.

Despite the different indicators used in the New Zealand and the U.S. studies, some common concepts emerge strongly. Factor 4 (Management Procedures) in the NZPLES and dimension 2 (internal processes) in the U.S. study contain many parallel indicators (notably those concerned with management competence and planning procedures). Factor 2 (Document and Information Supply) in the NZPLES corresponds with dimension 4 (access to materials) from the U.S. study. Factor 5 (Human and Physical Resources) in the NZPLES almost exactly matches dimension 5 (physical facilities) in the U.S. study. There are underlying similarities between N.Z. factor 7 (Public Involvement) and the U.S. dimension 6 (management elements). Factor 1 (Library-community Interface) in the NZPLES is perhaps more focussed than dimension 1 of the U.S. study, containing a

number of indicators relating to patron visits and activities and the library's impact in the community. The very narrow focus in factor 3 (Input Resources) from the NZPLES, which groups financial and staff input, is not matched by a similar dimension from the U.S. study.

4.5 Conclusion

The objective of the research was to define the concept of public library effectiveness as viewed by three main stakeholder groups. There are similarities and differences amongst the three main constituencies, but the similarities tend to emphasise that all stakeholders share central perceptions of a good public library, with variations mainly in usage (users) and accountability (councillors). There are almost no variations geographically, and few by size of library.

Furthermore, the indicators identified as most significant by each constituency are shown by the factor analysis to cover a wide range of broad dimensions of library performance to the extent that they can be ascertained at this stage. This range of dimensions, coupled with strong similarities shown among the perceptions of the three stakeholder groups, suggests that library managers can allow the other constituencies to help shape professional views on library performance measurement.

CHAPTER FIVE

Dimensions of Public Library Effectiveness

The first stage of research into New Zealand public library effectiveness (NZPLES), which replicated in many aspects the PLES conducted by Childers and Van House (1989b, Van House & Childers, 1990) was described in Chapter Four. This research was conceived as a two part project to replicate the two step method of the PLES. The two stages provide a separate but valid perspective on public library effectiveness, with a secondary benefit being the use of the results of the two stages to create operational performance measures for New Zealand's public libraries. This required the identification of dimensions of performance as well as uncovering the perceptions of effectiveness. The first stage attempted to answer the question posed by Van House and Childers (1990, p. 136), "Are there differences among constituent groups in their preferences among indicators, dimensions, and/or definitions of public library effectiveness?" The second stage, reported in this chapter, investigated their other major question, "What are the indicators and dimensions of public library effectiveness?" The major objective of the second stage of the New Zealand research was to identify broad dimensions of public library effectiveness for which key performance measures could be established. Secondary objectives were to identify how the dimensions of effectiveness reflected the perceptions of key stakeholder groups revealed in the first stage of the project; and which model of organisational effectiveness best represented the dimensions of library effectiveness identified by the U.S. study and those revealed in the NZPLES?

Childers and Van House (1989b) derived a method from previous studies of organisational effectiveness done within the context of non-profit organisations, which have shown effectiveness to be a multi-dimensional construct. This concept, they found, had not been addressed in the way library performance measures had hitherto been derived. Childers and Van House's investigations into the perceptions of library effectiveness of key constituency groups supported the view that inherent in their perceptions are four recognisable models of organisational effectiveness. They concluded that preferred indicators relate to the goal attainment model, the internal processes model, the external systems model, or the Multiple Constituencies model, and that a comprehensive set of measures should do likewise. The second part of their investigation was largely based upon the work of Cameron (1978, 1981), who analysed subjective perceptions of

organisational performance of internal participants. While recognising that there still may be some doubts about such an analysis, and that there are no right or wrong constituent groups, and still further that "other … groups may give different results," Van House and Childers (1990, p. 145), nevertheless, found in their results sufficient coherence to suggest that the method has some validity in other not-for-profit organisations, and that it has some contribution to make to our understanding of organisational effectiveness and to library effectiveness in particular. The results of the investigation presented here support the view that the method used in both the U.S. study and the NZPLES does indeed have validity. The findings show that, despite the differences of social and organisational culture between public libraries in the U.S. and New Zealand, enough similar indicators have grouped together in both studies to suggest that there are underlying dimensions of performance in the public libraries of both countries. It is hoped that these dimensions, in conjunction with the dimensions of performance, which in the previous stage were judged by key constituencies to be of greatest value, will offer assistance with the transformation of a set of operational measures into an empirically based set of performance measures for New Zealand libraries.

Unlike the PLES, which concurrently examined librarians' perceptions of what makes an effective library and their judgement of how their own library performed against the same set of indicators, the New Zealand study was carried out in two separate stages. In the first stage (described in Chapter Four), selected members of three key constituencies (librarians, local body Councillors, and library users) were asked to grade each item on a list of 95 indicators of performance on a Likert scale of 1-5 in terms of how well it represented their perceptions of library effectiveness. This chapter describes Stage Two of the NZPLES, a separately conducted census of librarians employed in 71 New Zealand public libraries, in which respondents were asked to judge how well their library performed when rated on each of the same 95 indicators of performance. Childers and Van House recognised that had this question been asked of other constituency groups in the U.S. study, each one could have produced a different response, and the same is true of the two non-librarian constituencies (Councillors and users) in the first stage of the New Zealand study. Librarians, however, could give the most informed responses to the second questionnaire. Further research will be needed to test the validity of this view. Until such research is completed, the high correlation between the three stakeholder groups' perceptions of effectiveness discovered in the first stage of the study (Chapter Four) indicate that

dimensions emerging from the second stage (this chapter) would not differ greatly from one group to another.

5.1 Method

A list of 95 indicators of public library performance was produced for the first stage of the research project. The indicators were grouped under broad headings to assist with comprehension. A list of all people working in those New Zealand public libraries serving a population of over 10,000 was compiled with the assistance of library managers in 72 libraries.[5] Managers were asked to supply lists of staff working in any technical or service area on a permanent basis for 10 hours or more each week. Although the research team prepared guidelines to assist library managers in determining who was to be included in the list, it was ultimately the managers who used their local knowledge to make the decision about who was a librarian in their organisation. The manager of one small public library refused to take part in the survey. In the other 71 libraries, all managers except one agreed to supply lists, and that one agreed to forward the survey instrument to staff, but it meant that no follow-up as possible with those library staff, and the rate of response (at 50%) was lower than for most other libraries, where figures of 100% were not uncommon.

A list of 1,626 librarians (managers, assistant librarians, library assistants, and some ancillary staff involved in service areas) was compiled. All were sent questionnaires with a covering letter explaining the project and its significance, the questionnaires were to be returned anonymously and directly to the surveyors. Respondents were asked, "How does your library rate on these indicators compared with an ideal library?" A total of 1,334 responses were received, giving an overall response rate of 84.5%. Two follow-ups were needed to achieve this response, which is lower than that achieved by Van House and Childers (1990) but high considering the questionnaire was sent directly to respondents with no further intervention from library managers. Overall, the large number of librarians who responded suggests that this study encompasses the opinions of nearly all New Zealand public librarians.

[5] The Public Libraries Special Interest Group of the New Zealand Library Association (NZLA) gave the survey strong support and publicity.

5.2 Results

The responses were entered into the SAS version 6.07 statistical package on a Micro Vax computer running Vax VMS. The means of all respondents' ratings on each of the 95 indicators were ranked, the items at the top of the ranked list being those indicators on which respondents considered their libraries to be performing best. Table 3 lists the indicators in ranked (Rk) order of their means, together with standard deviations (SD).

Table 3: Ranked list of indicators in NZPLES stage 2

Rk	*Indicator*	*Mean*	*SD*
1	Facility for users to reserve wanted material	4.32	0.78
2	Helpfulness, courtesy of staff	4.24	0.72
3	Range of library services offered whenever library is open	4.00	0.80
4	Availability of all library materials for browsing	3.98	0.88
5	Willingness of management to use new computer systems	3.97	0.98
6	Number of reference questions asked	3.95	0.78
7	Number of residents registered as members of the library	3.94	0.78
8	Facility of return of borrowed material after hours	3.92	1.15
9	Expertise of reference staff	3.87	0.81
10	General speed of service	3.86	0.76
11	Quality of books, magazines, other materials, etc.	3.83	0.76
12	Level of user satisfaction with library transaction/visit	3.83	0.65
13	Level of library's contribution to community (education, recreation, lifestyles, etc.)	3.81	0.81
14	Availability of photocopiers	3.81	1.02
15	Amount of use of books, etc. inside the library building	3.79	0.76
15	Total stock of books, magazines, other materials	3.79	0.86
15	Convenience of building location (near bus stops, parking)	3.79	1.08
18	Quality of reference materials	3.78	0.84
19	Match of hours open with user needs	3.77	0.89
20	Total materials processed (purchased, catalogued) per year	3.76	0.84
21	Extent to which services are free	3.75	1.05
22	Suitability, flexibility of loan periods for user needs	3.72	0.89
22	Level of reference services offered (quick enquiry, assistance with research, preparation of bibliographies, etc.)	3.72	0.90
24	Number of visits to library per year by all users	3.71	0.73
25	Proportion of collection actively being used	3.70	0.73
26	Number of visits per demographic grouping (young, etc.)	3.69	0.75
26	Average time spent in library by users	3.69	0.72
28	Accessibility of building (ramps for disabled, etc.)	3.67	1.19
28	Amount of community information available	3.67	0.87
30	Newness of books, magazines, other materials, etc.	3.66	0.84
31	Effective distribution of qualified staff at service points	3.65	0.94
32	Number of items purchased per year	3.64	0.87
33	Level of qualifications of staff	3.63	0.89
33	Amount of material borrowed from other libraries in NZ for users (by inter-library loan)	3.63	0.94

35	Speed and accuracy of reshelving of books, etc.	3.62	0.92
36	Match of library services to community needs	3.60	0.72
36	Accessibility of information/services to users by telephone	3.60	0.96
38	Frequency/quality of display of new materials	3.58	0.97
39	Efficiency/cost effectiveness in processing items	3.57	0.84
39	Competence of management	3.57	0.94
41	Speed of processing new items added to stock	3.56	1.00
41	Level of librarian's standing in community	3.56	0.87
43	Extent to which library achieves goals and objectives	3.55	0.83
44	Match of stock community needs and demands	3.54	0.78
44	State of repair of books, magazines, other materials, etc.	3.54	0.84
44	Flexibility of fines, rules, etc.	3.54	0.97
47	Efficiency/cost effectiveness	3.51	0.88
48	Match of goals and objectives to community needs	3.40	0.85
49	Identifiability of building from outside	3.39	1.14
50	Level of library's contribution to total flow of ideas, etc.	3.37	0.88
50	Comfort, appeal of library building	3.37	1.18
52	Availability of qualified staff for specialised services	3.36	1.02
52	Ease of use and arrangement of library catalogues	3.36	1.00
54	Relations with and support for community organisations	3.35	0.89
55	Extent of community awareness of library services	3.33	0.83
56	Availability of library catalogues throughout the library	3.32	1.08
57	Per item expenditure on new items being added to stock	3.29	0.76
58	Openness of management procedures, documents to community	3.26	0.99
58	Quality of planning procedures (short and long term)	3.26	0.99
60	Total money spent on books and other materials	3.25	0.89
60	Level of staff morale	3.25	1.10
62	Number and quality of written policies, standards	3.23	1.00
63	Extent of information about other libraries' holdings of books	3.22	1.24
64	Design, suitability of library building for purpose	3.18	1.19
65	Number and quality of library products and publications (brochures, lists of new books, etc.)	3.17	1.03
66	Total number of residents attending events, activities	3.15	0.93
67	Frequency of evaluation of building, programmes, stock	3.14	0.97
68	Amount of user education (teaching use of library)	3.12	0.97
68	Costs of events, activities	3.12	1.04
68	Money library spends per resident per year	3.12	0.91
68	Likelihood material wanted will be immediately available	3.12	0.76
72	Number and quality of services to populations remote from library	3.11	1.05
72	Money spent on books, etc. per resident per year	3.11	0.90
74	Adaptability of organisation	3.10	0.92
74	Total amount of money in library budget per year	3.10	0.95
74	Frequency of evaluation of planning	3.10	0.97
77	Number of staff	3.06	1.02
77	Range of types of materials (videos, software)	3.06	1.08
79	Amount of donations of books, etc.	3.05	0.91
79	Number and quality of library-oriented events and activities	3.05	0.97
81	Number and quality of signs for direction/guidance	3.01	1.09
82	Level of contribution to professional and business sectors	2.99	1.02
83	Level of staff workload	2.98	1.07
84	Nature of relations with Councillors	2.97	1.07
85	Number and quality of training programmes for staff	2.92	1.06

86	Total money spent of staff	2.87	0.94
87	Frequency of community analysis, user surveys of wants	2.83	1.09
88	Match of ethnic mix of staff to community	2.80	1.10
89	Availability of online computer information from NZ and overseas databases	2.77	1.28
90	Availability and suitability of other equipment	2.76	1.05
91	Availability of rooms for conferences, meetings, etc.	2.67	1.37
92	Number and quality of cultural events and activities	2.66	0.99
93	Amount of voluntary assistance from residents	2.63	1.23
94	Extent of public involvement in decision making	2.59	0.92
95	Extent of Councillors' interest and commitment	2.43	0.97

Compared with the U.S. study in which 34 of 91 indicators received a performance rating of 3 or more (on a scale of 1-5), 81 of the 95 indicators in the New Zealand study were rated at 3 or more, although the larger standard deviations seem to show greater variance in performance between public libraries in New Zealand compared with the U.S. Like their U.S. counterparts, New Zealand librarians rate their libraries as performing fairly well, but as Van House and Childers (1990) commented, surveys of other constituent groups might have given different results. Absolute means are unimportant, but it is the rankings of indicators relative to each other that are helpful in assessing opinions of performance. The large standard deviations (range 0.65 – 1.28) suggest that there is no important difference between the rankings of indicators close together in the list. This caution also applies to similar tables of indicators sorted according by the mean, especially the long lists in Tables 20 and 21.

The rankings show that librarians rated their library's performance highest on indicators related to service given by library staff, and lowest on community interaction (e.g. user surveys, number and quality of cultural events), expenditure on staff, and staff morale, and relations with local government Councillors – the same people that make resource allocation decisions. It is perhaps not surprising that New Zealand public librarians rate their own endeavours highly. The indicator that librarians had ranked as the most important when judging an effective public library, 'Helpfulness, courtesy of staff" (Cullen & Calvert, 1993) was ranked second by the same group when asked to judge their library's performance. Is this perhaps a case of self-justification or a self-fulfilling prophecy here? Similar results are reported in the U.S. study (Van House & Childers, 1990). However, indicators relating to the abstract ideal of the free flow of ideas in society (Intellectual freedom and Extent to which library services are free), which were the two highest ranked

indicators in terms of performance in the PLES, were not considered by New Zealand librarians to be as well met as in the U.S.

The rankings also reflect a perception of high use rates in New Zealand public libraries, indicators such as 'Number of reference questions asked', 'Number of residents registered as members of the library', 'Amount of use of books, etc. inside the library' appear in the first 15 rankings of the 95 indicators. The low rankings (84th and 95th) of the two indicators concerning relations with Councillors appear to be contradicted by the high correlation between Councillors' and librarians' perceptions of what makes an effective public library as reported in the first stage of this research (Cullen & Calvert, 1993). When the results of the first stage of the study were reported, librarians found it hard to accept that Councillors' views of good library performance so closely correlated with their own. Scepticism about Councillors' understanding of the library roles and performance is reflected in the low rankings of indicators of Councillor involvement. The first stage of the study produced ranked lists of stakeholder groups' perceptions of library effectiveness, and the second stage produced a ranked list of actual library performance. It is thus possible to ask a follow-up question, "Are libraries performing well in the areas their stakeholders perceive as being most important?" This can be answered by comparing the indicators that were given the highest ranking by each of the three stakeholder groups against the assessment of actual performance made by the librarians. When the top ten ranked indicators from each stakeholder's list (from Stage 1) is compared with the top twenty indicators from the ranked list of performance (Stage 2), only a few indicators appear in both lists. Only two from the librarian's list, two from the Councillor's list and five from the user's list appear in the top twenty indicators ranked on the basis of performance. These figures suggest there is a low correlation between the actual performance of public libraries and what the stakeholders want to see done well by the libraries.

5.3 Perceptions of Library Effectiveness

Table 4 shows the indicators that are common to the top twenty stakeholder responses in the two stages of the NZPLES. The first figure in each row is from the first stage of the NLPLES, the second figure is from the second stage of the NZPLES.

Table 4: Indicators common to both stages of NZPLES

	Stage **1**	Stage **2**
From the Librarian's list		
Helpfulness, courtesy of staff	1	2
Range of library services offered whenever the library is open	8	3
Quality of reference materials	10	18
From the Councillor's list		
Helpfulness, courtesy of staff	2	2
Match of hours open with user needs	5	19
From the User's list		
Helpfulness, courtesy of staff	1	2
Expertise of reference staff	6	9
Quality of books, magazines, other materials, etc.	2	11
Total stock of books, magazines, other materials	7	15
Match of hours open with user needs	9	19

5.4 The Dimensions of Effectiveness

A principal factor analysis followed by a Varimax rotation was conducted and an analysis that produced 13 factors was chosen as the one that explained the most variance, was the most robust, and was the most easily interpretable. Although the amount of variance (46.76%) accounted for by the 13 factors was not high, the factor analysis based on the views of 84.5% of New Zealand public librarians represents an accurate picture of public library performance in New Zealand.

The factor analysis can be used to group indicators into dimensions of library performance, based upon assumptions made by Van House and Childers (1990, p. 139) that indicators which constantly receive similar ratings are measuring the same underlying dimension of performance. The analysis, therefore, is used to interpret the factors that emerged from the data based upon respondents' subjective perceptions of their own library's performance. Granted the subjectivity of the selection of 13 factors, each of the 13 factors can be

considered to represent a dimension of public library effectiveness and should be included in any attempt made by public libraries to measure their overall effectiveness.

Table 5: Dimensions from the factor analysis in NZPLES Stage 2

Factor 1: Management culture and direction

.73773	Quality of planning procedures (short and long term)
.69962	Frequency of evaluation of planning
.68431	Competence of management
.66710	Adaptability of organisation
.63286	Frequency of evaluation of building, programmes, stock
.61832	Extent to which library achieves goals and objectives
.61716	Number and quality of written policies, standards
.60986	Openness of management procedures, documents to community
.58302	Efficiency/cost effectiveness
.54291	Match of goals and objectives to community needs
.49584	Extent of public involvement in decision making
.46758	Level of staff morale
.44315	Number and quality of training programmes for staff
.42911	Willingness of management to use new computer systems

Factor 2: Financial inputs

.84282	Money spent on books, etc. per resident per year
.82588	Money library spends per resident per year
.80697	Total money spent on books and other materials
.77492	Total amount of money in library budget per year
.58527	Number of items purchased per year
.57252	Per item expenditure on new items being added to stock
.48672	Total money spent of staff
.45747	Total stock of books, magazines, other materials

Factor 3: Range and depth of services

.64913	Availability of online computer information from NZ and overseas databases
.61882	Level of contribution to professional and business sectors
.58332	Range of types of materials (videos, software)
.53923	Extent of information about other libraries' holdings of books
.46761	Availability and suitability of other equipment
.43100	Quality of reference materials
.42663	Frequency of community analysis, user surveys of wants, needs, etc.
.40189	Availability of rooms for conferences, meetings, etc.
.39989	Level of library's contribution to total flow of ideas, etc.
.39339	Number and quality of library products and publications (brochures, lists of new books, etc.)
.36210	Amount of material borrowed from other libraries in NZ for users (by inter-library loan)
.34234	Number and quality of services to populations remote from library
.33531	Amount of community information available
.23473	Match of hours open with user needs

Factor 4: Community use and satisfaction

.64347 Number of visits to library per year by all users
.61010 Number of visits per demographic grouping (young, etc.)
.54153 Number of residents registered as members of the library
.51006 Average time spent in library by users
.50181 Level of library's contribution to community (education, recreation, lifestyle, etc.)
.40067 Extent of community awareness of library services
.36167 Proportion of collection actively being used
.34391 Match of library services to community needs
.33119 Level of user satisfaction with library transaction/visit
.29743 Level of librarian's standing in community

Factor 5: Physical environment

.81804 Comfort, appeal of library building
.78394 Design, suitability of library building for purpose
.66434 Accessibility of building (ramps for disabled, etc.)
.64514 Identifiability of building from outside
.46039 Number and quality of signs for direction/guidance
.44644 Convenience of building location (near bus stops, parking)
.39359 Facility of return of borrowed material after hours
.31899 Availability of all library materials for browsing

Factor 6: Collection management

.66000 Newness of books, magazines, other materials, etc.
.59711 State of repair of books, magazines, other materials, etc.
.58067 Quality of books, magazines, other materials, etc.
.45376 Total materials processed (purchased, catalogued) per year
.39188 Speed and accuracy of reshelving of books, etc.
.35837 Match of stock community needs and demands
.32040 Amount of use of books, etc. inside the library building

Factor 7: Access services

.52104 Availability of library catalogues throughout the library
.49365 Ease of use and arrangement of library catalogues
.41898 Range of library services offered whenever library is open
.39754 Accessibility of information/services to users by telephone
.37911 Facility for users to reserve wanted material
.34594 Likelihood material wanted will be immediately available
.29602 Availability of photocopiers
.26988 Frequency/quality of display of new materials

Factor 8: Reference and information services

.57287 Expertise of reference staff

.56145 Level of reference services offered (quick enquiry, assistance with research, preparation of bibliographies, etc.)
.50466 Level of qualifications of staff
.45649 Number of reference questions asked
.42792 Availability of qualified staff for specialised services
.38731 Effective distribution of qualified staff at service points
.31172 Amount of user education (teaching use of library)

Factor 9: Customer services

.61826 Flexibility of fines, rules, etc.
.59780 Extent to which services are free
.34621 Helpfulness, courtesy of staff
.33620 General speed of service
.29187 Relations with and support for community organisations
.26869 Suitability, flexibility of loan periods for user needs

Factor 10: Programmes and events

.57715 Number and quality of library-oriented events and activities
.54289 Total number of residents attending events, activities
.51771 Costs of events, activities
.51050 Number and quality of cultural events and activities
.41124 Amount of voluntary assistance from residents
.32784 Amount of donations of books, etc.

Factor 11: Staffing

.50112 Number of staff
.43978 Level of staff workload
.33084 Match of ethnic mix of staff to community

Factor 12: Technical processes

.64765 Speed of processing new items added to stock
.58740 Efficiency/cost effectiveness in processing items

Factor 13: Relations with Councillors and Council management

.68452 Extent of Councillors' interest and commitment
.67652 Nature of relations with Councillors

Because it was intended that the dimensions be used by practicing public librarians in New Zealand as a basis for the immediate development of performance measures for reporting and interfirm comparison purposes, it was considered necessary to make the labels given to factors (dimensions) as comprehensible and as interpretable as possible, and to involve a professional group in this task. At a workshop attended by several senior managers of

New Zealand's largest public libraries and the convenor of the Public Libraries Special Interest Group, the concepts covered by each factor were debated and labels that best described the concepts were allocated to each factor / dimension. The labels selected at the workshop are given as the dimension headers in the table above.

Most of the dimensions are recognisable from previous work on performance measurement (De Prospo, Altman, & Beasley, 1973; Van House, McClure, Zweizig, & Rodger, 1987). Discussion here, therefore, will be confined to those dimensions that are less familiar.

The first dimension, here labelled "Management culture and direction" neatly encompasses the main managerial tasks essential for library performance. These include planning, encouraging and managing public involvement in decision making, and staff morale. Interestingly, in both the PLES and the NZPLES, two indicators 'Level of staff morale' and 'Number and quality of training programmes' were separately grouped in the survey form but have merged in the management dimension in the analysis, suggesting that staff development programmes are more closely tied to staff morale than staff workload, emphasising the point often made in management literature that staff training is a management tool.

The third dimension is the most unfamiliar, as it does not correspond closely with previous attempts to model library effectiveness. A common thread throughout the indicators in this dimension is the word information, and the dimension as a whole is concerned with library services that deliver information to the user, although both the library and the user are almost invisible in the indicators. It seems to focus more on the area of effectiveness in which library managers have the power to choose which services to emphasise, and to reallocate resources towards those services they believe deliver information in the most effective and appropriate way. This dimension is the closest connection between this empirical work and the research of Van House (McClure, Van House, Zweizig, & Lynch, 1986) on the significance of role setting as an essential part of the task of measuring library effectiveness.

Indicators of gross outputs, such as the extent and uptake of services, are central to the fourth dimension. The concept of matching community needs in such outputs dictated the label. In the sixth dimension, the range and quality of stock were perceived by the group to emerge clearly in several indicators: newness of stock, and the timeliness of acquisition,

and reshelving contributing to the overall rate of refreshment of the collection available to the user.

The concept underlying the seventh dimension, "Access to services", was defined as being concerned with the library providing services that enable users to locate, retrieve, and use items within the collection, and as encouraging an organisational culture that has a user orientation, enabling users to make effective use of the library's collections. (The term intellectual access, which is implicit here, was deliberately avoided by the group as having connotations of elitism.) The eighth dimension includes staff professionalism, directed towards providing "Reference and information services", the chosen label. The ninth dimension includes the indicator 'Helpfulness, courtesy of staff' that had been ranked as the most important indicator of effectiveness by Librarians and Councillors in the first stage of the New Zealand study. This group of indicators was considered to be best described by the dimension label "Customer service", which sums up the emphasis on customer or client care evident in the dimension.

5.5 Comparison of Factor Analysis in the Two Stages

It is useful to compare the factor analysis of the data from both stages of the NZPLES research. The purposes of the surveys and their subsequent analyses were quite different, and variation between the factors is inevitable; however, a comparison between the sets of factors identified in the two stages may reveal a commonality between the stakeholder's perception of effectiveness and the performance of libraries. The first stage survey identified seven factors, which contrasts with the 13 factors identified by the survey of library performance reported here. The factors from the second stage are smaller and more focussed. The first factor from the first stage, "Library-community interface" has split among five factors in the second stage, with the majority of indicators appearing in "Community use and satisfaction", but several are in "Programmes and events". Similarly, "Document and information supply" from the first survey has split up, with an even number of indicators going to "Collection management" and '"Reference and information services". The other large factors are more consistent between the two surveys, but no factors are exactly alike.

There is another simple test that demonstrates the multidimensional nature of library effectiveness. The ranked lists showing stakeholders' perception of effectiveness (from

Stage 1) can be compared with the dimensions of effectiveness produced in Stage 2. If the philosophy underlying the research is correct then stakeholders' perceptions of effectiveness will be spread across a range of dimensions, thus demonstrating the multidimensional nature of public library effectiveness. These are the top ten indicators from each stakeholder group's ranked list of perceptions of effectiveness (Stage 1) matched with the thirteen dimensions of effectiveness produced in Stage 2.

Dimension	Librarians	Councillors	Users	Total
1	2	4	2	8
2	-	-	2	2
3	1	1	1	3
4	2	1	-	3
5	1	1	1	3
6	1	1	1	3
7	2	1	1	4
8	-	-	1	1
9	1	1	1	3
10	-	-	-	0
11	-	-	-	0
12	-	-	-	0
13	-	-	-	0
Total	**10**	**10**	**10**	**30**

It is apparent that stakeholders' perceptions of effectiveness are multidimensional in nature, reinforcing the internal validity of the research methodology. For example, the highest figure in this table shows a relationship between indicators of effectiveness favoured by Councillors with Dimension 1 from Stage 2 of the study, that is, four of the indicators that Councillors ranked in their top ten appear in the first dimension of effectiveness, which was labelled "Management culture and direction". Other indicators preferred by this group, however, are spread out among the remaining dimensions. The indicators perceived by the other stakeholder groups as important measures of effectiveness are even more spread out among the dimensions of effectiveness than those ranked highly by the Councillors. Clearly, if the major outcome of this study is to be a parsimonious set of performance measure for public libraries, then all 13 dimensions

produced in Stage 2 must be covered in order to make a match with the perceptions of effectiveness expressed by the key stakeholder groups in Stage 1.

5.6 Dimensions and Organisational Effectiveness

The multidimensional nature of public library effectiveness can be illustrated by matching the thirteen dimensions with the four models of organisational effectiveness described in Chapter 2. Each dimension makes the best fit with one model of organisational effectiveness, as follows.

Table 6: NZPLES dimensions and the models of organisational effectiveness

The Goal Attainment Model

Range and depth of services (3)
Access services (7)
Reference and information services (8)
Customer services (9)
Programmes and events (10)

The External Systems Model

Financial inputs (2)
Physical environment (5)
Staffing (11)

The Internal Process Model

Management culture and direction (1)
Collection management (6)
Technical processes (12)

The Strategic Constituencies Model

Community use and satisfaction (4)
Relations with Councillors and Council management (13)

The dimension label is given together with its factor number (see Table 5)

5.7 The New Zealand and United States Dimensions

It is interesting to ask the subsidiary question, "to what extent are the dimensions of public library performance international, and to what extent are they purely local phenomena?" In other words, are the origins of public libraries in European societies so similar that the

underlying dimensions will recur in every country, or are there sufficient social, economic, political, historical, and linguistic differences to make the underlying dimensions sufficiently different to warrant the replication of this research in every country? This latter view was one of the justifications for the near replication of the U.S. study in New Zealand's public libraries.

The first dimension in the New Zealand study "Management culture and direction" is very similar to the U.S. dimension Management quality, even including the same indicators on staff morale and staff training. The second NZPLES dimension, "Financial inputs", also has a close parallel in the U.S. dimension Expenditures. However, the rest of the comparison is not so clear-cut. The fourth NZPLES "Community use and satisfaction" has no single parallel in the U.S. study, though similar indicators appear in Usage and community impact, and Community fit. Equally, the NZPLES "Physical environment" covers concepts found in Building and Building access from the U.S. study. Other New Zealand dimensions are even more dissimilar to the U.S. ones, with no apparent parallel at all. "Range and depth of services" does not correspond with previous attempts to model effectiveness, and cannot be directly compared with any U.S. dimension, although indicators relating to a library's gateway role can be found in the U.S. dimension Larger material issues. Similarly, the N.Z. dimension "Access services" has no parallel. Caution must be exercised when comparing dimensions identified in different studies because the labelling process involves subjective judgement on the part of the analyst. It is easy to see how two different dimensions could be given labels that make them seem superficially similar, and this has happened in the two studies being compared here, for the New Zealand dimension "Staffing" centres on qualitative aspects of staffing, such as staff numbers and workload, whereas the U.S. dimension Staff describes a more qualitative dimension, including indicators such as 'staff quality' and 'staff contact with users'. The discovery of dimensions that have no equivalent in other studies suggests there is justification in the New Zealand study attempting to find the dimensions of public library effectiveness relevant to the local society.

5.8 Conclusion

The primary objective of Stage 2 of the NZPLES was to discover the dimensions and indicators of public library effectiveness. This was achieved, with thirteen dimensions revealed by a factor analysis of data from a census of all New Zealand public librarians.

The dimensions can be used to explain perceptions of effectiveness from one key stakeholder in New Zealand's public libraries, though a survey of other stakeholders might give different results. When the results of Stage 2 of the NZPLES were compared to the results from Stage 1, however, there were similarities between the perceptions of effectiveness from all three stakeholder groups surveyed, giving some support to the belief that there is a general concept of public library effectiveness shared by all key stakeholder groups, and that therefore the dimensions can be used as a basis for performance measurement.

The dimensions illustrate aspects of four models of organisational effectiveness. This suggests that the concept of public library effectiveness includes all four views of organisational effectiveness, and that they must all be included in performance measurement.

A comparison with the U.S. study showed some similarities between the NZPLES and the dimensions discovered by the PLES, though no conclusions can be drawn from this comparison, and further research is needed to investigate the commonality of perceptions of public library effectiveness in different countries.

CHAPTER SIX

Effectiveness in University Libraries

Chapters Four and Five described research that investigated the concepts of public library effectiveness. It was appreciated that the stakeholders of academic libraries may well have rather different expectations and so the perception of what made for an effective academic library could well be significantly different to the perceptions of an effective public library. That understanding led to the research described here and in Chapter Seven. This research was conducted shortly after McDonald and Micikas (1994) reported the results of their study of academic libraries in six mid-Atlantic states of the United States and the District of Columbia. A similar methodology was chosen, though largely because it would deliver the results needed for New Zealand rather than a desire to replicate the U.S. research. Using the same method made it possible to compare results, however, and as the method has been used subsequently in the United Kingdom (Pickering, Crawford, & McLelland, 1996) there is the potential to examine results from different academic library cultures with a view to measuring the extent to which expectations of stakeholders concur, and assessing whether the underlying dimensions of effectiveness can be used internationally.

The study, like the public libraries effectiveness research, was conducted in two stages. The research used the Multiple Constituencies model described in Chapter Three. Using the definition of 'effectiveness' as how well the organisation meets the expectations of its key stakeholder groups, it examined the perceptions of library effectiveness held by seven key constituencies (stakeholder groups) of all seven New Zealand university libraries.[6] It was carried out by means of a questionnaire survey of a random sample of members of each identified constituency. The purpose of the first stage of the research was to ascertain the expectations of the constituencies in order to:

- Provide university library managers with better information with which to judge the degree to which they meet expectations; and
- Determine which models of organisational effectiveness were favoured by the various constituencies.

The research questions posed at the outset of the first stage were:

6 The Auckland University of Technology had not, at the time of research, been given a university charter.

- What are the key indicators of university library effectiveness, as perceived by the different constituencies in New Zealand university libraries?
- Are there differences among constituent groups in their preferences among key indicators of effectiveness in New Zealand university libraries?

6.1 Method

The first stage of this project was based on the Multiple Constituencies model which asserts that organisations have a number of constituencies to which they are answerable for their performance, all of whose expectations need to be met, to varying degrees, if resources are to be secured. The seven New Zealand universities in this research were all partly funded by the central government. They are uniform in nature, and it was possible to identify six key constituencies common to all the universities. These were:

- Resource allocators (this group included members of the governing body in each university, i.e. the University Council and key decision-makers in university management, such as members of the Planning and Resources Committee, Vice-Chancellor, and Assistant Vice-Chancellors, Registrar and Finance Registrar)
- Senior library staff (those engaged in policy and decision making)
- Other library staff
- Graduate students
- Undergraduate students.

Permission was sought from each university's Vice-Chancellor to carry out a survey amongst staff and students, and from the President of the Students' Association of each university. Because of the provisions of the *Privacy Act 1993* all due care had to be taken to protect the privacy of students whose names and addresses were made available by each university. Support from the Committee of New Zealand University Librarians (CONZUL) was sought (and given), and minor modifications to the survey were made in response to suggestions from this group.

It was decided that no distinction would be made between the role of an academic as teacher and academic as scholar/researcher, since academics must find a balance between these roles throughout their working life, and the survey would perhaps reveal where they placed their priority for the provision of library services.

Academics, graduate students, and undergraduate students were further subdivided into seven subject groupings (at the request of CONZUL) to see if there were significant differences in perceptions of library effectiveness based upon subject discipline. The seven subjects chosen were considered to be reasonably reflective of the range of subjects taught in New Zealand universities: chemistry, education, English, horticulture/forestry/ law, music, and marketing (though education, English, horticulture, and music were not taught at all seven universities).

With six constituencies and seven potential subject groupings, a sampling method was needed to get a similar number of responses from each small subgroup (such as postgraduate marketing students, or academics in chemistry). Since the intention was to examine responses aggregated by constituency and subject over all seven universities it was believed that at least thirty responses from each subgroup should be obtained. Some groups could not supply the minimum desired thirty respondents so all available members of that category were included in the sample. Within this framework, random samples were used when possible. The sample size was sufficient to ensure that all groups were adequately represented, and the end results appear sufficiently robust to suggest that enough data had been gathered.

6.1.1 Questionnaire

A literature search identified over 500 performance indicators relevant to academic libraries. These were collapsed to just 99 indicators by the simple device of writing a new indicator where there had previously been two or more describing the same input or output. On the questionnaire, respondents were asked to show, on a 5 point Likert scale, how useful they would consider each of the 99 indicators if asked to judge the effectiveness of a university library. Follow-up letters were used where possible to increase response rates, though some universities would not supply the names and addresses of students and so follow-up was impossible. Overall a 59.3% response rate was achieved.

6.1.2 Data analysis

The responses were entered into the SAS version 6.07 statistical package on a micro Vax running VMS Vax, and analysed by producing ranked lists of indicators for each constituency. All ranked lists were based on the means of scores, from 1 to 5, given by all respondents in that group (a non-response was considered null). The rankings of each

indicator thus show how important that indicator is to that constituency as a performance measure.

A Spearman Rho correlation between pairs of ranked lists was calculated, as were the correlation between each academic, graduate and undergraduate group in each of the seven subjects. These correlation scores revealed any consonance or dissonance between the views of the different constituencies and subject groups.

6.2 Results

The mean of the scores given by all respondents in a particular constituency was used to create a ranked list of indicators for that constituency. Tables 7 - 12 present the ranked lists for each constituency.

Table 7: Ranked indicators of Resource Allocators

		mean
1	Competence of library management	4.46
2	Helpfulness, courtesy of staff	4.39
3	Match of hours open with user needs	4.26
4	Expert staff assistance to users available when needed	4.25
6	Expertise of reference staff	4.20
7	Efficiency/cost effectiveness	4.11
8	Proportion of library materials listed on computer catalogue	4.10
9	Access to library catalogues, via networks throughout the campus	4.10
10	Access to CD-ROMs, databases, via networks throughout the campus	4.07
11	Proportion of items wanted by user finally obtained	4.07
12	Quietness of study environment	4.05
13	Match of goals, objectives to user group needs	4.05
14	Equitable allocation of materials budget amongst subjects taught	4.00
15	Number of seats per full-time student equivalent	4.00
16	Total amount of library budget	3.97
17	Provision made for disabled users	3.94
18	Equipment (e.g. photocopiers) kept in service by good maintenance	3.92
19	Currency of library materials	3.92
20	Flexibility of budget to respond to new subject areas	3.91

Table 8: Ranked indicators of Senior Library Staff

		mean
1	Helpfulness, courtesy of staff	4.86
2	Expert staff assistance to users available when needed	4.75
3	Competence of library management	4.66
4	Expertise of reference staff	4.60
5	Ease of use of public catalogues	4.60
6	Use of planning procedures (short and long term)	4.52
7	Extent to which users are made aware of services available	4.48
8	Match of goals, objectives to user group needs	4.44
9	Success in answering reference questions	4.43
10	Extent to which library achieves goals, objectives	4.42
11	Amount of user education (i.e. teaching use of library and materials)	4.41
12	Availability of reference staff when needed	4.39
13	Proportion of library materials listed on computer catalogue	4.39
14	Proportion of items wanted by user finally obtained	4.37
15	Currency of library materials	4.34
16	Amount of total library budget as proportion of university expenditure	4.34
17	Flexibility of budget to respond to new subject areas	4.32
18	Access to library catalogues, via networks throughout the campus	4.32
19	Speed and accuracy of re-shelving of materials	4.24
20	Availability of library catalogues throughout the library	4.20

Table 9: Ranked indicators of Other Library Staff

		mean
1	Helpfulness, courtesy of staff	4.42
2	Expert staff assistance to users available when needed	4.77
3	Competence of library management	4.66
4	Expertise of reference staff	4.63
5	Proportion of library materials listed on computer catalogue	4.48
6	Availability of reference staff when needed	4.47
7	Success in answering reference questions	4.42
8	Ease of use of public catalogues	4.40
9	Extent to which users are made aware of services available	4.36

10	Proportion of items wanted by user finally obtained	4.32
11	Amount of user education (i.e. teaching use of library and materials)	4.29
12	Match of goals, objectives to user group needs	4.29
13	Extent to which library achieves goals, objectives	4.27
14	Use of planning procedures (short and long term)	4.22
15	Currency of library materials	4.21
16	Provision made for disabled users	4.17
17	Match of hours open with user needs	4.17
18	Speed and accuracy of re-shelving of materials	4.14
19	Total amount of library budget	4.13
20	Level of staff work load	4.13

Table 10: Ranked indicators of Academic Staff

		mean
1	Expert staff assistance to users available when needed	4.42
2	Expertise of reference staff	4.38
3	Proportion of library materials listed on computer catalogue	4.36
4	Quietness of study environment	4.34
5	Helpfulness, courtesy of staff	4.33
6	Total amount of library budget	4.30
7	Access to library catalogues, via networks throughout the campus	4.26
8	Match of hours open with user needs	4.25
9	Speed of provision of items through inter-library loan	4.25
10	Proportion of items wanted by user finally obtained	4.21
11	Competence of library management	4.20
12	Success in answering reference questions	4.20
13	Currency of library materials	4.19
14	Speed of acquisition of new materials	4.19
15	Safeguards against mutilation and theft	4.17
16	Facility for users to recommend items for purchase	4.16
17	Availability of reference staff when needed	4.14
18	Speed and accuracy of re-shelving of materials	4.11
19	Access to CD-ROMs, databases, via networks throughout the campus	4.08
20	Provision of multiple copies of items in high use	4.05

Table 11: Ranked indicators of Graduate Students

		mean
1	Match of hours open with user needs	4.51
2	Expert staff assistance to users available when needed	4.49
3	Provision of multiple copies of items in high use	4.48
4	Proportion of library materials listed on computer catalogue	4.45
5	Quietness of study environment	4.43
6	Equipment (e.g. photocopiers) kept in service by good maintenance	4.43
7	Helpfulness, courtesy of staff	4.39
8	Expertise of reference staff	4.29
9	Proportion of items wanted by user finally obtained	4.28
10	Speed of provision of items through inter-library loan	4.24
11	Speed and accuracy of re-shelving of materials	4.21
12	Speed of acquisition of new materials	4.21
13	Currency of library materials	4.21
14	Extent to which services are free	4.19
15	Provision of adequate number of photocopiers	4.15
16	Availability of reference staff when needed	4.13
17	Competence of library management	4.11
18	Provision made for disabled users	4.11
19	Speed of recall of items out on loan requested by other users	4.10
20	Number of seats per full-time student equivalent	4.08

Table 12: Ranked indicators of Undergraduate Students

		mean
1	Provision of multiple copies of items in high use	4.62
2	Match of hours open with user needs	4.58
3	Equipment (e.g. photocopiers) kept in service by good maintenance	4.55
4	Quietness of study environment	4.54
5	Helpfulness, courtesy of staff	4.48
6	Expert staff assistance to users available when needed	4.44
7	Number of seats per full-time student equivalent	4.37
8	Provision of adequate number of photocopiers	4.33
9	Proportion of library materials listed on computer catalogue	4.32
10	Speed and accuracy of re-shelving of materials	4.29

11	Extent to which services are free	4.22
12	Provision made for disabled users	4.20
13	Speed of recall of items out on loan requested by other users	4.18
14	Safeguards against mutilation and theft	4.18
15	Proportion of items wanted by user finally obtained	4.17
16	Competence of library management	4.16
17	Range of library services available when library is open	4.15
18	Expertise of reference staff	4.14
19	Facility to reserve items on short term loan	4.12
20	Availability of reference staff when needed	4.09

The first 20 indicators as ranked by the six constituencies were compared to see if any were consistently ranked highly by several stakeholder groups.

From these rankings it can be seen that 'Competence of library management' is the most important indicator for Resource allocators (as it was for the Councillors in the public library research), and both groups of library staff placed this indicator third in their rankings. Many of the other indicators ranked highly by the resource allocators reflect this interest in management policies and skills; notably 'Extent to which library achieves goals, objectives' (ranked fifth), 'Efficiency/cost effectiveness' (ranked seventh) and 'Match of goals, objectives to user group needs' (ranked 13th). They are still evidently heedful of customer needs, ranking 'Helpfulness, courtesy of staff' second, 'Match of hours open with user needs' third, 'Expert staff assistance to users when needed' fourth, and 'Expertise of reference staff' sixth. These indicators all seem to reflect an emphasis on information service as a close second priority for university libraries under their governance.

While both groups of library staff place the service indicators 'Helpfulness, courtesy of staff', and 'Expert assistance to users when needed' at the top of their rankings, they too recognise the need for 'Competence of library management', with both groups ranking it third. Library staff priorities perhaps reflect a closer understanding of what is involved in information service by placing a higher priority on 'Ease of use of public catalogues'; fifth for Senior Library Staff, eighth for Other Library Staff, but only 31st for Resource Allocators. However, the library staff groups continue to show a strong focus on management issues by ranking 'Use of planning procedures', 'Match of goals, objectives

to user group needs', and 'Extent to which library achieves goals' relatively high on their lists. Senior Library Staff, though, rank 'Proportion of library materials listed on computer catalogues' considerably lower than their own junior staff, and lower than Resource Allocators, and all user groups, suggesting that they could become a little more aware of the importance given to this aspect of service by their key constituencies. Overall, however, there is a clear consonance between the two groups of library staff.

It is noticeable that the user groups surveyed have quite different priorities. Academic staff rated the two indicators relating to expert assistance most highly, and have a major concern about intellectual access ('Proportion of library materials listed on computer catalogues', and 'Access to computer catalogues throughout campus'). A further concern for document delivery is shown by the ranking of 'Total amount of library budget', 'Speed of provision of items through interlibrary loan', and 'Proportion of items wanted by users finally obtained' in their top ten indicators, with very small differences in the means. The question about where academics would place their highest priorities in library service is answered here. Their role as researcher seems to come a long way ahead of their role as teacher and its concomitant demand that they pay heed to resources that their students will need.

Student groups are not indifferent to matters relating to library management, but naturally place more emphasis on their immediate study needs. There are differences between the groups. While graduates rate 'Expert staff assistance to users' highly, their focus seems to be on access to the library and getting what they want ('Match of hours open with user needs' first, 'Provision of multiple copies of items in high use' third, and 'Proportion of library materials listed on computer catalogue' fourth). Both groups reflected a perennial student complaint in their high ranking of 'Equipment (e.g. photocopiers) kept in service by good maintenance', an indicator that falls outside the top 15 indicators for Resource allocators, Senior library staff, and Other library staff (who rank it 18th, 32nd, and 25th respectively). Undergraduate students are clearer in their focus on immediate study needs, and include 'Number of seats per full-time student' in their top ten choices, though interestingly, they seem to place a higher priority on 'Helpfulness, courtesy of staff' than do Graduates (fifth and seventh respectively), perhaps because they are less secure in their information retrieval skills. The Undergraduates display a very different set of priorities from the Resource allocators, and place 'Speed and accuracy of reshelving' highest of all the groups, seemingly being most acutely aware of the significance of this activity to their

ability to obtain materials in high demand in a timely manner. Resource allocators rank this indicator 43rd, Senior library staff 19th, Other library staff 18th, Academics 18th, while Graduates rank it 11th and Undergraduates 10th. Both Academic staff and Undergraduates rank 'Safeguards against mutilation and theft' in their top 20, while Senior library staff, perhaps unaware of the irritation caused by mutilation and theft, rank the indicator 66th.

6.3 Correlations between Ranked Lists

The overall similarities and differences between these ranked lists are shown in Table 13, in which the correlation between ranked pairs of constituencies is displayed. The highest correlation (at .94, where 1.0 is an exact match) is between the two groups of library staff. The next highest correlation, not surprisingly, is between the two student groups (at .91). Senior library staff are more in touch with the views of the Resource allocators than they are with any other group apart from their own staff, and this would seem to be entirely as expected, though they are not as close to the Resource allocators as are Academic staff. The correlation between Senior library staff and Undergraduates is the lowest correlation in the whole table. If the library wishes to serve the learning needs of the university undergraduates well it is reasonable to assume that senior library staff will have a good understanding of what the undergraduates expect from their library.

Table 13: Correlation matrix between rankings of all constituencies

	Senior Library Staff	Other Library Staff	Academic Staff	Graduate Students	Under-graduate Students
Resource Allocators	.80	.79	.85	.78	.68
	Senior Library Staff	.94	.69	.67	.60
		Other Library Staff	.73	.72	.69
			Academic Staff	.89	.74
				Graduate Students	.92

All the results are significant. Using a t-test with n-2 (i.e. 97), the 1% significance level is only .257, so all the results given in Tables 13 to 17 are considerably above the significance level.

Similar correlation tests were carried out to investigate differences in the views (i.e. between the ordering of ranked lists of indicators) between Academic staff, Graduates, and Undergraduates, in each of the chosen subject areas.

Table 14 gives the correlations for Academic staff. The correlation on each pair ranged between .77 for Chemistry and Music to .90 for English and Music. These differences were less than might have been expected and no correlation is as low as that between Senior library staff and Undergraduates in Table 13. Interestingly the correlation amongst subject rankings by Graduates (Table 15) and Undergraduates (Table 16) do not display correlation at the lower end of the scale, the lowest among Graduates being .81 between Marketing and Music, and the lowest among Undergraduates is .90 between English and Marketing.

Table 14: Correlations between subject divisions among Academics

	Chem	Educ	Engl	Hort	Law	Mark	Music
Chemistry		.85	.78	.77	.84	.85	.77
Education	.85		.88	.87	.90	.89	.88
English	.78	.88		.77	.88	.80	.90
Horticulture	.77	.87	.77		.79	.87	.83
Law	.84	.90	.88	.79		.87	.84
Marketing	.85	.89	.80	.87	.87		.83
Music	.77	.88	.90	.83	.84	.83	

Table 15: Correlations between subject divisions among Graduates

	Chem	Educ	Engl	Hort	Law	Mark	Music
Chemistry		.91	.89	.93	.91	.91	.84
Education	.91		.95	.93	.93	.90	.87
English	.89	.95		.91	.91	.86	.90
Horticulture	.93	.93	.91		.92	.91	.88
Law	.91	.93	.91	.92		.92	.84
Marketing	.91	.90	.86	.91	.92		.81
Music	.84	.87	.90	.88	.84	.81	

Table 16: Correlations between subject divisions among Undergraduates

	Chem	Educ	Engl	Hort	Law	Mark	Music
Chemistry		.94	.93	.95	.96	.95	.94
Education	.94		.93	.94	.94	.93	.94
English	.93	.93		.91	.92	.90	.95
Horticulture	.95	.94	.91		.95	.95	.93
Law	.96	.94	.92	.95		.96	.92
Marketing	.95	.93	.90	.95	.96		.91
Music	.94	.94	.95	.93	.92	.91	

Correlations between all seven subjects across all user groups (Academic staff, Graduates, and Undergraduates) are shown in Table 17 are very high, and well above the significance level of .257.

Table 17: Correlations between subjects among all constituencies combined

	Chem	Educ	Engl	Hort	Law	Mark	Music
Chemistry		.94	.92	.94	.94	.93	.92
Education	.94		.95	.96	.95	.92	.95
English	.92	.95		.92	.94	.88	.97
Horticulture	.94	.96	.92		.95	.95	.94
Law	.94	.95	.94	.95		.96	.93
Marketing	.93	.92	.88	.95	.96		.89
Music	.92	.95	.97	.94	.93	.89	

This disproves the belief of CONZUL members that there would be larger differences between indicators of effectiveness preferred by academics and students in the different subject disciplines than between the different constituencies. Variations in correlations between subject groups, as shown in Table 17, a high of .97 between English and Music to a low of .88 between English and Marketing are far less than those in Table 13 between Senior library staff and Other library staff (.94) and Senior library staff and Undergraduate students (.60). Correlations between all subject groups are uniformly higher than all except one of the correlations between the views of the different constituencies.

These correlations give a broad impression of the extent to which the perceptions of academic library effectiveness held by the major stakeholder groups agree or disagree. That the correlations are almost all high gives confidence that appropriate performance measures can be developed, based upon the Multiple Constituencies model, covering many of the expectations of each stakeholder group. Significant differences in the perception of effectiveness must be addressed in both measures developed and in the allocation of resources, if the library is to meet the expectations of each stakeholder group. In addressing these questions, the library manager is more able to account to governors and users alike why only a limited number of the expectations of each group have been accommodated, and why certain expectations cannot be met.

6.4 Organisational Effectiveness in the Rankings

Each group of stakeholders ranks highly some indicators that relate to each of the four models of organisational effectiveness: the goal attainment model, the external systems model, the internal process model, and the Multiple Constituencies model. While it is not surprising that the Resource allocators group favours all four models, since they number among their group managers of considerable experience, financial experts, and senior academics, it is perhaps more surprising that some of the user groups should instinctively recognise the need for a broad approach to library effectiveness. Resource allocators, for example, in favouring 'Competence of library management', 'Extent to which library achieves goals, objectives', and 'Efficiency/Cost-effectiveness' are reflecting goal attainment and internal processes models, as well as the more traditional external systems model ('Number of seats per full-time students equivalent', 'Total amount of library budget', and 'Currency of library materials', which all make it into the top 20 of their preferred indicators). The Multiple Constituencies model is reflected in their high ranking

of service indicators (noted above) and by their inclusion of the indicator 'Match of goals, objectives to user group needs' in their top 20, from 99 indicators.

Senior library managers also reflect the goal attainment model ('Use of planning procedures, short and long-term', ranked sixth), the external systems model ('Amount of total library budget as a proportion of university expenditure'", ranked 16th), the internal processes model ('Competence of library management', ranked third, and 'Extent to which library achieves goals, objectives' ranked tenth), as well as the Multiple Constituencies model, reflected in the high ranking of service indicators and 'Match of goals, objectives with user group needs' in tenth place.

Academic staff and the student groups have not ignored resources and internal processes, though perhaps they are less evident. 'Total amount of library budget', and 'Competence of library management' are both ranked highly by the academics, while the same competency indictor is ranked highly by both student groups. Yet the primary focus of the student groups is on study needs and the services that cater for those needs. More important than actual top rankings, where very small differences in the mean separate similarly favoured indicators quite markedly, the relatively high correlations between all six stakeholder groups tend to reinforce the view that all four models are well represented among the choices and perceptions of effectiveness of all constituencies. The second stage of the study, reported in Chapter Seven, was designed to deduce the broader dimensions of effectiveness by analysis of actual performance of these same New Zealand libraries. It gives further support to Cameron's theories (1978, 1981) and Childers and Van House's (1989b) conclusion that effectiveness is a multi-dimensional construct. To be politically acceptable to all stakeholders, performance measures should report on performance in all dimensions, and show a high degree of consonance with the perceptions of effectiveness shown by stakeholder groups in this stage of the research.

6.5 Conclusion

The research reported in this chapter shows some similarities and some differences in what each key constituency in the New Zealand academic library environment expects from their library. Some of these differences are not easily reconciled, and academic library managers are involved in a political process when allocating resources to meet these varying expectations. At different times and under different pressures, no doubt some

constituency groups might figure more largely in the allocation of resources, but the others should never disappear. Library managers can take heart, though, from the findings here that many expectations are held in common by all stakeholder groups, and that all seem to have an adherence to the four main models of organisational effectiveness. As operationalised measures are developed from the second stage of the research it will be possible to evaluate them in terms of the criteria of Orr (1973).

Figure 2: The NZULES stage 1 survey instrument

The questionnaire listed all 99 indictors given below, with these instructions.

This is a list of criteria which might be used to judge the performance of a university library. Which of these seem, from your point of view, more important, and which least important in judging the performance of a university library?
Instructions. *Put a circle around one number on each line. Circle 5 if you think the item is most important. Circle 4 if it is not quite so important, and so on. Circle 1 for the items you think have the least importance.*
Please remember, you are not judging the performance of your own university library, but saying what you would like to see used to measure the performance of a university library.

The complete list of 99 Indicators

Regular evaluation of building
Facility for users to recommend items for purchase
Access to library catalogues, via networks throughout the campus
Expert staff assistance to users available when needed
Frequent evaluation of collection
Competence of library management
Proportion of staff professionally qualified
Regular communication with user groups
Level of staff work load
Speed of acquisitions of new materials
Availability of library catalogues throughout the library
Conservation principles used in housing library materials
Match of goals, objectives to user group needs
Provision made for disabled users

Expertise of reference staff

Number of library staff per full-time equivalent academic staff

Provision of personal computers for users' own work

Proportion of collection out on loan at one time

Speed of provision of items through inter-library loan

Openness of management procedures and documents to users

Equitable allocation of materials budget amongst subjects taught

Availability of reference staff when needed

State of repair of materials (books, journals, etc.)

Use of collection development policies

Proportion of library budget spent on materials

Distance of library from lecture theatres and other teaching rooms

Division of library materials expenditure between books and periodicals

Arrangement of library collection

Facility to reserve items on short term loan

Provision of adequate number of photocopiers

Proportion of materials budget spent on research materials

Adequate and pleasant workspace for library staff

Reporting back to users who recommend items for purchase

Total number of registered borrowers

Match of hours open with user needs

Total number of items held by library

Extent to which services are free

Total number of items borrowed per year

Range of types of materials (videos, computer software, etc.)

Number of seats per full-time student equivalent

Quietness of study environment

Proximity of refreshment service during hours library open

Provision of multiple copies of items in high use

Provision of microfilm and microfiche readers

Library staff involvement in organisational life of university

Provision of group study rooms

Equitable and effective fines policies

Provision of photocopiers in all parts of library

Equipment (e.g. photocopiers) kept in service by good maintenance

Access to CD-ROMs, databases, via networks throughout the campus

Use of planning procedures (short and long term)

Number of seats occupied at peak hours

Proportion of library materials listed on computer catalogue

Amount of use of materials in library without being borrowed

Total amount of library budget

Display of new books and new periodical issues

Availability of printed periodical indexes

Currency of library materials

Safeguards against mutilation and theft

Equitable allocation of materials budget between groups of users (staff/students)

Speed of recall of items out on loan requested by other users

Proportion of journals bound as opposed to unbound

Efficiency/Cost effectiveness

Success rate of users in obtaining a desired item on first visit to library

Library expenditure per full-time equivalent student

Percentage of collection borrowed each year

Number of library staff per full-time equivalent student

Success in answering reference questions

Provision of personal study carrels

Amount of total library budget as proportion of university expenditures

Availability of all library collections for browsing

Extent to which library achieves goals, objectives

Adequacy of library collection compared with other institutions

Speed of recall of reserved items

Amount of user education (i.e. teaching use of library and materials)

Extent of involvement of user groups in decision making

Ease of use of public catalogues

Proportion of total stock restricted to short term loan

Provision of teaching facilities within library

Comfort, appeal of building

Flexibility of budget to respond to new subject areas

Regular notification of users of new materials added to stock

Proportion of library budget spent on staff

Extent to which users are made aware of services available

Availability of user seating near reference collection

Speed and accuracy of re-shelving of materials

Cost per item (books) added to stock

Percentage of stock not used in past five years

Amount of time journals are out of circulation for binding

Rate at which collection is growing

Number and quality of signs for direction/guidance

Range of library services available whenever library is open

Number and quality of written management policies

Availability of periodical indexes on CD-ROM

Percentage of potential users actively using library

Availability of user-pays online searching of periodical indexes

Helpfulness, courtesy of staff

Proportion of items wanted by user finally obtained

Flexibility of loan periods

CHAPTER SEVEN

Dimensions of University Library Effectiveness

The New Zealand University Library Effectiveness Study (NZULES) described here and in Chapter Six set out to test the value of the Multiple Constituencies model of organisational effectiveness (Cameron, 1978, 1981). The questions asked for the overall research were:

- Are there different perceptions of effectiveness amongst the various stakeholders of a New Zealand university library?
- Can dimensions of performance be observed that indicate there are dimensions of effectiveness that could be used as a basis for performance measurement?
- Can a core range of dimensions be identified between this and other studies that would support a small, well-targeted set of empirically based performance measures that could be widely adopted?

Stage 1 of the NZULES dealt with the first question, and that was described in Chapter Six. The purpose of the second stage was to examine the actual performance of each of the seven New Zealand university libraries (as at 1994), by asking library staff to rate their library's performance against each of the 99 indicators used in the first stage of the study. From a factor analysis of these responses, broad dimensions of performance were derived. In each of these broad dimensions one indicator should emerge as a key or surrogate for that dimension. The declared priorities of the library staff as revealed in the first stage of the research were also compared with the perceptions of reality that emerge from their assessment of their own activities. Results of both parts of the study could be used to develop performance measures that encompass the broad dimensions of library performance while taking into account stakeholder perceptions of library effectiveness.

The methodology followed the one successfully used in the NZPLES Stage 2. All staff working in technical or service positions of 15 hours per week or more were sent the same set of indicators and asked to rate their library against each indicator on a Likert scale of 1-5 (with 1 being 'least important' and 5 being 'most important'). Those who did not respond were sent reminders, and the overall response rate of 78.8% (n = 915) was considered good for this sort of research. The resulting data and its analysis give a very

good picture of how each separate library was performing on each of the 99 indictors, but assessing performance in each library was not the main objective of the research. The overall objective was to use the responses to investigate *patterns* in the responses that would reveal hitherto unknown relationships between what library staff perceived to be good performance in one area of library activity (such as budgetary or planning procedure) with good performance in another (such as attention paid to customer needs).

It was recognised that choosing only two constituencies to carry out this survey presented some problems. Had members of the other four constituencies used in Stage 1 been asked to carry out the assessment the results might have been different. It was believed, however, that only the two groups of library staff had the knowledge to give an informed response to the question asked in the survey. It was also recognised that librarians in one library might rate their performance higher than those in another. This does not invalidate the results, since the objective of this stage of the study was to correlate responses from individuals on each of the indicators and to look for consistencies among ratings of performance on different indicators, thus revealing whether a library which the staff believed performed well (or poorly) on one indicator would also perform comparably well (or poorly) on a different indicator. The assumption here, based on the premise of Van House and Childers (1990, p. 139) is that a relationship of this kind between performance on two or more indicators in all the libraries surveyed would reveal some common underlying dimension of performance. This assumption is tested again, as it was in the NZPLES (see Chapters Four and Five), by further replication of the methodology. However, further research will be needed to establish whether there are marked differences in overall assessment of performance on the various indicators, and more importantly for this method of investigation, whether differences in derived dimensions of performance occur when different constituencies are asked to assess actual library performance. This research assessed a view of university library effectiveness at the time of the survey, but this might change over time.

In contrast to the NZPLES in which indicators were grouped under general headings to give respondents help in identifying the area of library activity they were being asked to assess, the indicators in the university study (the NZULES) were not grouped in any way but were randomly scattered throughout the survey. The possible impact of this on responses will be discussed later.

Data from the survey were entered into the SAS version 6.07 statistical package on a UNIX-based Silicon Graphics mainframe, then analysed using a principal factor analysis followed by Varimax rotation.

7.1 The Ranked Indicators

The means of all respondents' ratings on each of the 99 indicators were ranked, the indicators at the top of the list being those on which respondents considered their libraries to be performing best. Of all the 99 indicators in the questionnaire, 76 received a performance rating of 3 or more, suggesting that New Zealand university library staff believe that the overall performance of their libraries is above the mid point of the scale. More important than absolute means are the relative rankings of indicators, though even here it can be seen that as the standard deviations are high (range = 0.59 to 1.21), too much should not be read into the relative positions of indicators close together in the ranked list.

The highest ranked indicator, 'Extent to which services are free', received a mean score of 4.06, where 4 in the survey was for a library performing "quite well". Academic libraries in New Zealand rarely charge for specific services, though students pay fees to the parent institution. The indicator ranked second was 'Helpfulness, courtesy of staff'. It is ranked highly, both as an indicator perceived by constituency groups as an important measure of effectiveness, and as something done well in the libraries as judged by the staff themselves. The other highly ranked indicators reveal no clear pattern, though most show some aspect of library service, either passive in 'Match of hours open with user needs', or active as in 'Display of new books and new periodical issues'.

The bottom 10 indicators suggest that library staff do not believe that the universities place sufficient value on their library staff, as shown by poorly rated performance on staff numbers, work load, overall funding and involvement of library staff in the life of the university. By contrast, library staff have rated their own performance highly, with 'Helpfulness, courtesy of staff' ranked second and 'Expertise of reference staff' tenth and 'Proportion of staff professionally qualified' in 11th place. There was clearly a gulf between staff perceptions of their own performance and value, and their beliefs about their organisation's perception of them. This raises an issue that management should perhaps address.

The high ranking of the indicator 'Extent to which services are free' raises an interesting point for discussion. A possible reason for the high ranking of this indicator is that New Zealand introduced, in the late 1980s and early 1990s, more elements of a market economy with the result being the introduction of some charges. This applied to the public sector, including universities. University libraries managed to resist the trend to extra fees to a large extent, and staff were clearly conscious of this fact. Very few services incur charges (and this is still the case), though some such as interlibrary loans obtained from overseas incur a charge in almost all universities. By contrast, public libraries introduced many charges for services that were previously offered at a zero charge to the customer, mainly because their overall funding was held down by local governments and they could no longer offer all services on what was made available from the public purse. In an equivalent survey conducted in 1992, public libraries ranked the indicator 'Extent to which services are free', only 21st out of 95 indicators, with a mean of 3.75 (Calvert & Cullen, 1994). In the same 1992 survey the public librarians gave the highest ranking to a rather more prosaic indicator 'Facility for users to reserve wanted material'. American public librarians, however, had ranked 'Extent to which services are free' second in their assessment of performance (Van House & Childers, 1990).

One of the assumptions behind the research was that New Zealand's seven university libraries[7] are similar enough for a national study to be meaningful, and this point was accepted by the university librarians themselves before the study began. The ranked list, however, displays an interesting feature for those indicators with a relatively high standard deviation, which is that more than half of those indicators with a standard deviation of 1.00 or higher are concerned with physical facilities, for example, 'Number of seats occupied at peak hours', 'Adequate and pleasant workplace for library staff', and the indicator with the highest standard deviation (1.21), 'Comfort, appeal of building'. The variation in the standard deviation suggests there is a difference between the physical facilities in the seven university libraries, or more precisely, there is a perception among library staff that the facilities are different. With the exception of these indicators on physical facilities the standard deviations are unremarkable, evidence that there is enough homogeneity between the seven university libraries to justify a common set of performance measures.

[7] There were seven universities in New Zealand in 1995, the year of this research. There are currently eight.

7.2 Constituencies' Views and Library Performance

Effectiveness as a concept is not an absolute; it is possible to direct organisational energy towards, and to perform with great efficiency, an activity which is not focussed on the organisation's main goals. Lynch's (1983) useful definition of effectiveness is "something which does well that which it is supposed to do" (p. 388). When following the Multiple Constituencies model of organisational effectiveness, an organisation might well choose to adopt goals which are directed towards meeting the various expectations of its main stakeholders. This research, therefore, attempted to compare the preferred indicators of effectiveness of the various stakeholder constituencies with actual library performance as assessed by staff working in those libraries. The top 20 indicators (i.e. indicators of real performance aggregated from ratings by staff in all libraries) have been compared with the top ten indicators from each of the six ranked lists of stakeholder perceptions of effectiveness produced in the first stage of the research (described in Chapter Six).

The following indicators occur in both lists, showing that, for these indicators, at least, there is a match between desired indicators of effectiveness and actual performance.

- Five of the top ten indicators of the Resource allocators group are in the top 20 of the indicators on which New Zealand university libraries consider themselves to be performing well. They are: 'Helpfulness, courtesy of staff', 'Match of hours open with user needs', 'Expert staff assistance to users available when needed', 'Expertise of library staff', and 'Proportion of library materials listed on computer catalogue'.
- Academic staff and Graduate students do slightly better; 'Access to library catalogues via networks throughout the campus', the seventh preferred indicator of academic staff, is added to the list, ranking eighth on actual performance. The sixth preferred indicator of Graduate students, 'Equipment (e.g. photocopiers) kept in service by good maintenance', however, ranks 18th in actual performance.
- Five indicators in the top ten preferred indicators of Senior library staff, Other library staff, and Undergraduates, are found in the top 20 indicators of actual performance.

Given the closeness of the correlations between views of the various constituencies in the first stage of the study (Chapter Six), it is not surprising there is a fairly evident similarity in each of the comparisons. Why should the views of academic staff and graduate students

be more strongly represented than those of the library staff themselves? Is it perhaps that librarians instinctively lean more towards the Multiple Constituencies model – and pay special heed to the most powerful constituency in their environment, the academic staff? It might also be said that this emphasis suits graduate students well, for they share many of the needs of academic staff. Undergraduate students are not necessarily less well served since they also place great emphasis on 'Equipment (e.g. photocopiers) kept in service by good maintenance'. However, the slightly lower emphasis on performance which meets their demands (which previously had never been systematically assessed) is also shown in the much lower correlation between the views of Senior library staff and Undergraduate students in the first half of the study. Lack of the same immediacy of consonance between the views of the Resource allocators and what librarians are actually doing in libraries might result from the fact that until now no one has determined the expectations of Resource allocators. This reasoning does not account for the fact that librarians are not performing as well against indicators preferred by themselves as a group, as they do against indicators preferred by at least two other constituencies.

7.3 Dimensions of Effectiveness

The raw data recording every respondent's assessment of his or her own library's performance on each of the 99 indicators was subjected to a factor analysis. A principal Varimax rotation was conducted and 13 factors emerged as the most robust and easily interpretable solution. Several clusters based on a smaller number of factors emerged early in the analysis and most groupings remained constant through ten to 14 factors, with some indicators being thrown into smaller and smaller clusters as the number of factors was increased. The selected clustering around 13 factors explained 49.32% of the variance.

Table 18 shows the results of the factor analysis; only those indicators loading at .4 or higher have been included in this table. The factor analysis was used to group indicators which receive similar overall ratings into the most consistent and interpretable clusters that represent the dimensions of public library performance. Each factor, therefore, represents a dimension of university library performance that should be included in any attempt made by these libraries to evaluate effectiveness. Each factor has been given a label which describes the dimension of performance encompassed by it, but the labels are entirely subjective, they do not spring *directly* from the factor analysis.

Table 18: Dimensions from the factor analysis in NZULES stage 2

1: Management Processes

.66288 Number and quality of written management policies

.63226 Use of planning procedures (short and long term)

.61362 Openness of management procedures and documents to users

.61330 Use of collection development policies

.61154 Extent of involvement of user groups in decision making

.59557 Equitable allocation of materials budget amongst subjects taught

.57745 Regular communication with user groups

.56200 Match of goals, objectives to user group needs

.54201 Reporting back to users who recommend items for purchase

.54180 Frequent evaluation of collection

.52487 Library staff involvement in organisational life of university

.51940 Competence of library management

.45798 Extent to which library achieves goals, objectives

.41812 Provision of personal computers for users' own work

.40007 Equitable allocation of materials budget between groups of users (staff/students)

2: Resource Inputs

.71193 Number of library staff per full-time equivalent student

.65384 Amount of total library budget as proportion of university expenditures

.64097 Number of library staff per full-time equivalent academic staff

.56401 Number of seats per full-time student equivalent

.53726 Library expenditure per full-time equivalent student

.50936 Provision of adequate number of photocopiers

.49576 Level of staff work load

.48712 Total amount of library budget

.48575 Provision of personal study carrels

.44317 Proportion of library budget spent on staff

.40506 Provision of photocopiers in all parts of library

3: Collection

.72519 Total number of items held by library

.70421 Adequacy of library collection compared with other institutions

.57305 Rate at which collection is growing

.44439 Currency of library materials

.43659 Arrangement of library collection

4: Access Issues

.60169 Percentage of potential users actively using library

.48257 Amount of time journals are out of circulation for binding

.48688 Number and quality of signs for direction/guidance

.45124 Availability of periodical indexes on CD-ROM

.45044 Range of library services available whenever library is open

.44776 Proportion of items wanted by user finally obtained

.41376 Speed and accuracy of re-shelving of materials

5: Reference Service

.61822 Expertise of reference staff

.58012 Expert staff assistance to users available when needed

.56186 Availability of reference staff when needed

.53632 Success in answering reference questions

.49965 Amount of user education (i.e. teaching use of library and materials)

.44191 Helpfulness, courtesy of staff

6: Physical Access to Materials

.67299 Speed of recall of reserved items

.62602 Speed of recall of items out on loan requested by other users

.46632 Equitable and effective fines policies

.44344 Availability of all library collections for browsing

.43773 Facility to reserve items on short term loan

7: Further Services

.67993 Ease of use of public catalogues

.54097 Provision of microfilm and microfiche readers

.54032 Provision of group study rooms

.53251 Provision made for disabled users

8: Collection/Library Use

.61714 Proportion of collection out on loan at one time

.59536 Percentage of collection borrowed each year

.49850 Total number of items borrowed per year

.45993 Amount of use of materials in library without being borrowed

.40140 Number of seats occupied at peak hours

9: Physical Environment

.76813 Comfort, appeal of building

.70704 Adequate and pleasant workspace for library staff

10: Repairs and Safeguards

.52114 State of repair of materials (books, journals, etc.)

.51788 Safeguards against mutilation and theft

11: Access to Periodical Articles

.51088 Division of library materials expenditure between books and periodicals

.48581 Availability of user-pays online searching of periodical indexes

[.37883 Availability of printed periodical indexes]

12: Convenience

.52526 Match of hours open with user needs

.50036 Proximity of refreshment service during hours library open

13: User Seating

.54467 Availability of user seating near reference collection

Note: 31 indicators do not appear on this table because they loaded at lower than .4.

The first dimension, labelled “Management processes”, includes a number of indicators relating to planning procedures, policy making, and communications. The involvement of user groups in the decision-making process is also present in this dimension, as is communication with users. Indicators of aspects of collection management and evaluation

of the collection are in this dimension. Policy-making for equitable distribution of funds between subject disciplines and different user groups also occurs here, showing that this is also considered to be a management responsibility.

The second dimension, "Resource Inputs", is familiar to many academic librarians. University librarians, especially in New Zealand and other Commonwealth countries, have traditionally counted their inputs in terms of these indicators, including 'Number of library staff per full-time equivalent student', 'Number of library staff per full-time equivalent academic staff', and 'Amount of library budget as a proportion of university expenditure'. The presence of two indicators concerned with the provision of photocopiers may seem unusual, until the importance of photocopying by library customers in the mid-1990s as an extension of the collection is appreciated.

The third dimension is relatively small and coherent. All the indicators are about the collection in one way or another, and the highest loading indicator 'Total number of items held in the library' is measured in just about every academic library in the world. Indicators that could be considered relevant to the collection but are more about access than the materials themselves fall into other dimensions, such as the number of photocopiers in dimension two and access to periodical indexes in dimension four.

Another commonly collected figure, though perhaps more common in public rather than academic libraries, the 'Percentage of potential users actively using the library' is the highest loading indicator in the fourth dimension. The other indicators are ways the customer can judge success in finding wanted items and information in the library, and it would seem reasonable that if the library succeeds or fails on the other indicators, the number of potential customers actively using the library will go up or down in proportion.

The fifth dimension has coherence, and is concerned with the quality of reference services provided by the library. Expertise is clearly associated with success in answering customer's questions. The indicator 'Helpfulness, courtesy of staff' appears in this dimension, showing how important reference service is in the university library environment, when other service points can claim to have helpful and courteous staff.

The sixth dimension, "Physical Access to Materials", brings together a number of indicators relating to the ability of customers to obtain desired items. A library's fines

policy, for example, has an impact on the availability of wanted items. Two indicators concerned with the speed the library delivers wanted items to the end-user have the highest loading in the dimension (.67299 and .62602); the dimension thus appears to focus on the needs of the largest customer group and its demands – the undergraduate student group.

The seventh dimension has only four indicators and all are concerned with services that might said to be outside core activities, but which all affect overall library effectiveness. It is interesting to note that the highest loading indicator in the dimension, 'Ease of use of public catalogues', was highly ranked by several stakeholder groups in Stage 1 of the NZULES. Group study rooms are in this dimension rather than dimension nine, which is very small.

More coherence emerges in the eighth dimension, "Collection/Library Use", which includes a number of traditional indicators of performance and statistics widely collected by academic libraries, and which is concerned with amounts of use of the library services and collections.

The ninth dimension has only two indicators, of which the higher loading 'Comfort, appeal of building', has a very high loading in the factor analysis (.76813).

The existence of a small dimension, the tenth, on "Repairs and Safeguards", indicates that this is an important aspect of performance in university libraries, where there is usually very heavy use made of a small core set of materials (and for which, substitutes are rarely acceptable to the customer), and where theft and mutilation are more of a problem than in public libraries. University libraries obviously need to ensure that this dimension is included in their choice of measures.

The eleventh dimension, "Access to Periodical Articles" includes some clearly vital but not high-loading indicators. 'Availability of printed periodical indexes' does not load above the chosen point of significance (.4) but it is included in Table 18 because it is consistent with the rest of the dimension. Some other apparently similar indicators (e.g. 'Availability of periodical indexes on CD-ROM') have loaded elsewhere.

The twelfth and thirteenth dimensions cover indicators that do not seem to correlate well with performance on other dimensions, although 'Match of hours open with user needs' is

presumably well covered by the indicator 'Extent of involvement of user groups in decision making'.

7.4 Comparison of Dimensions in New Zealand Studies

The 13 factors were derived from the NZULES by careful examination of the factor analysis. Thirteen factors had also emerged from the NZPLES; some, but not all, of these appear to describe the same dimension of performance as in the NZULES. Given the fact that a new set of indicators derived from the literature relating to academic library performance had been used in this study and that not all indicators had parallels with the public libraries study, the results are remarkably consistent with those of the NZPLES. Of the 13 dimensions of effectiveness determined in each of the New Zealand studies, six identifiable dimensions appear quite distinctly in both.

Table 19: Comparisons of dimensions in NZULES and NZPLES

NZULES	**NZPLES**
MANAGEMENT PROCESSES	MANAGEMENT CULTURE
RESOURCE INPUTS	FINANCIAL INPUTS
COLLECTION	Range and depth of services
Access issues	COMMUNITY USE AND SATISFACTION
REFERENCE SERVICE	PHYSICAL ENVIRONMENT
Physical access to materials	COLLECTION MANAGEMENT
Further services	Access services
COLLECTION/LIBRARY USE	REFERENCE AND INFORMATION SERVICES
PHYSICAL ENVIRONMENT	Customer services
Repairs and safeguards	Programmes and events
Access to periodical articles	Staffing
Convenience	Technical processes
User seating	Relations with Council

Note on table: six dimensions appear in both studies, and they are shown in upper case letters.

The first dimension in the NZULES, "Management Processes", is very similar to the first dimension in the NZPLES. Of the top five loading indicators in this dimension, 'Number and quality of written management policies', 'Use of planning procedures (short and long term)', 'Openness of management procedures and documents to users', and 'Extent of involvement of users groups in decision making' all appear in similar form in the management dimension of the NZPLES. Both surveys also include 'Match of goals, objectives to user needs' and 'Competence of library management' in the management dimension. Some indicators had not been identified among the performance indicators suggested in the literature for public library use, but were found in the literature of academic library performance. The indicators 'Reporting back to users who recommend items for purchase' and 'Use of collection development policies' had not been included in the earlier survey, but may now be seen as important for public libraries. 'Level of staff morale', which had emerged in the literature as an indicator for public libraries, and which in both the Childers and Van House study (1989b) and the New Zealand study factorised into the dimension concerned with management procedures was unfortunately not included in the NZULES. A consistent pattern can be seen here, that management policies and procedures are a significant area of library performance that any assessment of library effectiveness must encompass.

Given the different environment of university and public libraries, the second university library dimension "Resource Inputs", equates well with familiar public library indicators, such as 'Money spent on books per resident per year' (the highest loading indicator in this factor in the NZPLES), 'Total amount of money in library budget per year', and 'Total money spent on staff'.

The third dimension in the university study, "Collection", contains some indicators that relate to the equivalent dimension derived from the public library survey and some that do not. 'Total number of items held in library' for example, is represented by 'Total stock of books, magazines and other materials' in the NZPLES, where it is included in the dimension "Inputs". Yet three indicators, 'Adequacy of library collection compared with other institutions', 'Rate at which collection is growing', and 'Currency of library materials', all have close parallels in the equivalent dimension of the NZPLES.

The fourth dimension of the NZULES, "Access issues", has no close parallel in the dimensions of the public libraries study. The highest loading indicator in this dimension 'Percentage of potential users actively using the library' is similar to some of the statements in the NZPLES dimension "Community use and satisfaction", but it is not a close match.

The fifth dimension in the NZULES, "Reference Service" also has a close equivalent in the NZPLES. In this case the identical indicator 'Expertise of reference staff' is the top loading indicator in both sets of dimensions. The wording of other indicators differs somewhat, but in both studies indicators such as 'Expert staff assistance available to users when needed', and 'Availability of reference staff when needed' are included in this dimension. The indicator 'Success in answering reference questions' in the NZULES is less well assessed by the two indicators 'Level of reference services offered (quick enquiry, assistance with research, etc.)' and 'Number of reference questions' asked in the NZPLES. 'Amount of user education' appears in this dimension in both studies, although loading below .4 in the NZPLES. Most interestingly, in the NZULES 'Helpfulness, courtesy of staff' loads in this dimension, whereas in the NZPLES it loads in the dimension "Customer Service", of which there is no equivalent in the NZULES.

The sixth dimension has no true parallel in the dimensions derived from the public libraries study, unless it is in the dimension called "Access Services", which includes 'Availability of library catalogues throughout the library', 'Ease of use and arrangement of library catalogues', as well as 'Facility for users to reserve wanted material', and 'Likelihood material wanted will be immediately available' (which both load below .4).

The seventh dimension in the university libraries study "Further Services" includes 'Ease of use of public catalogues', which appears in "Access Services" in the public libraries study. The significance of some of these indicators to overall library performance is not well defined by respondents in either survey, especially those in academic libraries.

Public libraries have traditionally collected other statistics covered in the dimension "Community Use and Satisfaction", which includes 'Number of visits to library per year by all users', and 'Number of residents registered as members of the library'. Both dimension eight "Collection/Library Use" in the NZULES and "Community Use and

Satisfaction" in the NZPLES may be regarded as having some common purpose in the measurement of traditional statistical outputs.

The ninth dimension "Physical Environment", with two crucial indicators loading at .4 and above, has an exact parallel in the public libraries study (the fifth dimension from that study) although there it includes a wider variety of indicators. Dimensions ten, twelve and thirteen in the NZULES are small with no parallels in the public libraries study.

The eleventh NZULES dimension understandably does not emerge from the public libraries survey, and few indicators relating to it were included in the survey. The last two dimensions are not specifically addressed in the public library dimensions.

The question of whether the order in which the indicators were presented to respondents affects results seems to have been answered. The indicators in the NZULES questionnaire were listed in apparently haphazard order. Those in the NZPLES were listed in groups under appropriate headings to assist in the comprehension of indicators. There is no evidence, looking at the results from both studies, that either way of listing has had a marked influence on the outcome.

7.5 Comparison with U.S. Dimensions

The New Zealand results can be compared with the results that emerged from the earlier study by McDonald and Micikas (1994) in which they surveyed academic libraries in institutions without doctoral programmes in the states of Delaware, Maryland, New Jersey, New York, Ohio, Pennsylvania, and the District of Columbia. The number of libraries surveyed was greater (n = 264); however, only 131 institutions responded, an average of three questionnaires returned per institution.

Ninety-five indicators were included and respondents were asked to rate their "perceptions of the presence and strength [in their library] of a number of factors which a large survey of library-related literature suggest contribute to library organizational-level effectiveness" (McDonald & Micikas, 1994, p. 127). Respondents were to rate their library on a seven point Likert-type scale, ranging from 7 for 'more than adequate (rich)' to 1 for 'inadequate (lean)'. Twenty-one factors emerged, divided by the researchers into 13 major domains and six minor domains. (One factor was discarded as revealing no correlation to its

indicators.) The twenty were then further grouped into four main domains: Major Resources, Services, Library/Stakeholder Interaction, and Access. Of the 13 major domains identified, there are some parallels with the NZULES and the NZPLES. "Collection adequacy" ("Collection" in the NZULES); "Staff Size and Diversity" (one of the "Inputs" identified in the NZPLES); "Librarian Professional Service" ("Reference skills" in the NZULES); "Library/User's Shared Goals", "Shared Organizational Direction" (includes some of the management and policy indicators of the NZPLES), and "Bibliographic Access/Use of the Library's Collections" Again six core dimensions emerge which, while not identical with either of those of the New Zealand studies, point to some very basic library functions that increasingly look essential to an appropriate range of performance measures.

7.6 Perceptions Compared with Performance

The factor analysis (see Table 18) made it possible to deduce the dimensions of library effectiveness in New Zealand universities. The ranked list of indicators (Table 20) showed how library staff rated the performance of their own libraries. By comparing the two it ought to be possible to see how libraries are performing on each of the dimensions of effectiveness. There are no statistical tests for this relationship, only a simple matching of ranked indicators with the dimensions of performance. Only those indicators loading at .4 and above in the factor analysis were included in Table 18. Because of this, seven of the highest ranked indicators of actual library performance do not appear in Table 18 and cannot be considered in this comparison; they did not correlate significantly with any of the dimensions.

Table 20: Ranked indicators from NZULES stage 2

		Mean	st dev
1	Extent to which services are free	4.06	0.78
2	Helpfulness, courtesy of staff	3.98	0.75
3	Facility to reserve items on short term loan	3.96	0.79
4	Match of hours open with user needs	3.92	0.82
5	Total number of registered borrowers	3.92	0.70
6	Distance of library from lecture theatres and other teaching rooms	3.91	0.78
7	Total number of items borrowed per year	3.90	0.72
8	Access to library catalogues, via networks throughout the campus	3.89	0.89

9	Display of new books and new periodical issues	3.87	0.84
10	Expertise of reference staff	3.82	0.77
11	Proportion of staff professionally qualified	3.76	0.73
12	Availability of all library collections for browsing	3.73	0.85
13	Proportion of library materials listed on computer catalogue	3.71	8.88
14	Number of seats occupied at peak hours	3.71	1.19
15	Ease of use of public catalogues	3.67	0.91
16	Expert staff assistance to users available when needed	3.66	0.79
17	Speed of recall of reserved items	3.64	0.77
18	Equipment (e.g. photocopiers) kept in service by good maintenance	3.64	0.94
19	Success in answering reference questions	3.62	0.70
20	Speed of recall of items out on loan requested by other users	3.62	0.78
21	Availability of library catalogues throughout the library	3.61	0.92
22	Amount of use of materials in library without being borrowed	3.61	0.69
23	Amount of user education (teaching use of library and materials)	3.61	0.86
24	Proportion of journals bound as opposed to unbound	3.59	0.84
25	Availability of printed periodical indexes	3.58	0.83
26	Total number of items held by library	3.58	0.82
27	Adequacy of library collection compared with other institutions	3.53	0.87
28	Proportion of items wanted by user finally obtained	3.53	0.68
29	Arrangement of library collection	3.52	0.91
30	Division of library materials expenditure between books and periodicals	3.49	0.73
31	Equitable and effective fines policies	3.47	0.85
32	Currency of library materials	3.46	0.74
33	State of repair of materials (books, journals, etc.)	3.45	0.79
34	Proportion of total stock restricted to short term loan	3.44	0.72
35	Percentage of collection borrowed each year	3.43	0.70
36	Percentage of potential users actively using library	3.39	0.79
37	Extent to which library achieves goals, objectives	3.39	0.76
38	Availability of periodical indexes on CD-ROM	3.37	0.96
39	Provision of adequate number of photocopiers	3.34	1.00
40	Efficiency / Cost effectiveness	3.34	0.79
41	Competence of library management	3.32	0.87
42	Availability of user-pays online searching of periodical indexes	3.32	0.97

43	Range of types of materials (videos, computer software, etc.)	3.31	0.92
44	Rate at which collection is growing	3.31	0.77
45	Proportion of collection out on loan at one time	3.31	0.68
46	Proportion of library budget spent on materials	3.31	0.71
47	Provision of microfilm and microfiche readers	3.30	0.82
48	Adequate and pleasant workspace for library staff	3.30	1.12
49	Availability of reference staff when needed	3.29	0.90
50	Cost per item (books) added to stock	3.28	0.58
51	Flexibility of loan periods	3.26	0.83
52	Facility for users to recommend items for purchase	3.25	0.94
53	Provision of multiple copies of items in high use	3.24	0.84
54	Provision made for disabled users	3.24	1.08
55	Speed of acquisitions of new materials	3.23	0.91
56	Match of goals, objectives to user group needs	3.21	0.81
57	Regular evaluation of building	3.19	1.00
58	Equitable allocation of materials budget amongst subjects taught	3.18	0.87
59	Speed and accuracy of re-shelving of materials	3.17	0.97
60	Success rate of users in obtaining a desired item on first visit to library	3.17	0.73
61	Extent to which users are made aware of services available	3.17	0.88
62	Safeguards against mutilation and theft	3.17	0.90
63	Range of library services available whenever library is open	3.16	0.89
64	Equitable allocation of materials budget between groups of users (staff/students)	3.16	0.67
65	Regular notification of users of new materials added to stock	3.15	1.05
66	Use of planning procedures (short and long term)	3.14	0.90
67	Proximity of refreshment service during hours library open	3.13	1.00
68	Speed of provision of items through inter-library loan	3.12	0.97
69	Reporting back to users who recommend items for purchase	3.11	0.97
70	Number and quality of signs for direction/guidance	3.10	1.08
71	Amount of time journals are out of circulation for binding	3.08	0.91
72	Use of collection development policies	3.05	0.88
73	Comfort, appeal of building	3.03	1.21
74	Access to CD-ROMs, databases, via networks throughout the campus	3.00	1.10
75	Availability of user seating near reference collection	3.00	0.99

76	Regular communication with user groups	3.00	0.89
77	Total amount of library budget	2.99	0.86
78	Proportion of materials budget spent on research materials	2.99	0.71
79	Provision of photocopiers in all parts of library	2.95	1.06
80	Percentage of stock not used in past five years	2.94	0.66
81	Flexibility of budget to respond to new subject areas	2.93	0.81
82	Frequent evaluation of collection	2.91	0.93
83	Openness of management procedures and documents to users	2.90	0.95
84	Library expenditure per full-time equivalent student	2.86	0.79
85	Number and quality of written management policies	2.85	0.95
86	Provision of group study rooms	2.84	1.11
87	Conservation principles used in housing library materials	2.84	0.95
88	Quietness of study environment	2.81	0.93
89	Provision of teaching facilities within library	2.78	1.03
90	Library staff involvement in organisational life of university	2.71	0.94
91	Provision of personal study carrels	2.71	1.10
92	Level of staff work load	2.70	0.97
93	Number of library staff per full-time equivalent academic staff	2.70	0.85
94	Number of seats per full-time student equivalent	2.70	0.85
95	Proportion of library budget spent on staff	2.67	0.88
96	Amount of total library budget as proportion of university expenditures	2.66	0.93
97	Extent of involvement of user groups in decision making	2.62	0.85
98	Number of library staff per full-time equivalent student	2.54	0.86
99	Provision of personal computers for users' own work	2.41	1.08

Library staff have shown by rating their libraries' performance that indicators from dimension 5 ("Reference Service") and 6 ("Physical Access to Materials") represent the activities they believe they carry out most successfully. Dimension 5 has six indicators, of which five appear at 23rd place or higher (and more importantly, two of them are in the top ten), with the other at 49th. Dimension 6 has five indicators all at 45th place of higher, and dimension 12 has one of its two indicators at 4th and the other at 67th. The next best performed dimension is 11 ("Periodical Articles").

At the other extreme there are two dimensions that staff clearly believe they carry out less successfully in their libraries. Dimension 1 ("Management Processes") and dimension 2 ("Resource Inputs") are made up of indicators that fall in the bottom half of Table 20. The bottom ten places are all indicators from these two dimensions. The highest ranked indicator from dimension 1 is at 37th place, with another at 41st; the other 13 indicators from that dimension rank at 56th place or below. Two of the bottom three indicators are from the first dimension. Indicators from dimension 2 are rated even lower, with the highest ranked indicator at 39th place, but with every other indicator falling at 77th place or lower. Seven of the bottom ten indicators come from the second dimension, showing that library staff believe that they are given insufficient resources to deliver excellent service.

New Zealand university library staff obviously believe they provide good service to customers, and that belief is reflected in their high rating of their performance on service dimensions. Dimension 5 ("Reference Service") is about the quality of reference staff and their ability to help library customers and answer their questions. Dimension 6 ("Physical Access to Materials") has two indicators for speed of service, and those are the two ranked most highly by staff. By contrast, staff believe their libraries' resource inputs are too low, and dimension 2 ("Resource Inputs") contains several indicators that go beyond the control of most library staff. This may result in a feeling of powerlessness when it comes to allocating university resources.

It is rather strange to see the dimension on Management Processes perform so badly. It is worth pointing out that this stage of the NZULES used a virtual census of all library staff, meaning that junior staff will have outnumbered senior library staff in the population questioned, and it may be that there is a difference between the perceptions of the two groups.

7.7 The Dimensions and Organisational Effectiveness

The four main models of organisational effectiveness identified earlier as the Goal Attainment model, the External Systems model, the Internal Processes model, and the Multiple Constituencies model, are all represented in the major dimensions of library effectiveness revealed by this study. In the first dimension ("Management Processes"), the Goal Attainment model is shown by indicators 'Match of goals, objectives to user needs', and 'Extent to which library achieves goals, objectives', and the Internal Processes model

by the indicators 'Number and quality of written management policies', 'Use of planning procedures', and 'Competence of library management'. The Multiple Constituencies model is more weakly represented in indicators such as 'Match of goals, objectives to user needs', 'Equitable allocation of materials budget between groups of users, etc.'. The literature on academic library performance had, at the time of the NZULES, been weak on indicators of customer perceptions of service, other than speed of document delivery. To develop this further, libraries need to know how library customers perceive the services they use. With that knowledge, it should be possible to develop indicators of service quality, then operationalise them as measures of service quality. That was one justification for the research described in Chapters Eight to Eleven.

Every indicator reflects the thrust of one or more models, and it is possible to connect each dimension in the NZULES in this way. Some are simpler than others. The second dimension ("Resource Inputs") is entirely focussed on the External Systems model. The third ("Collection") reflects only the Goal Attainment and External Systems models. The fourth dimension ("User satisfaction"), as its name implies, relates primarily to the Multiple Constituencies model.

The fifth dimension, like the first, reflects a number of models, 'Availability of staff when needed' tending to the Multiple Constituencies model, while 'Expertise of reference staff' and 'Expert staff assistance to users available when needed' suggest both an External Systems model (the resources to staff the service at this level) and an Internal Processes model (the wisdom and management skills to roster staff effectively).

The entire set of dimensions derived from the NZULES therefore reflects a constantly shifting focus on one or another model of organisational effectiveness. It can be concluded, therefore, that it is not only appropriate to include all these dimensions when measuring library effectiveness, but that to do so will mean making a wise and informed use of the four main models of organisational effectiveness.

7.8 Conclusion

The similarities in results between the various studies suggest robustness in the methodology, which leads to the conclusion that there are some core dimensions of effectiveness that can be used for assessing effectiveness, and as a basis for performance

measurement in both public and academic libraries. Furthermore, the perceptions of effectiveness held by the various constituencies or stakeholder groups of the organisation must be taken into account when performance measures are being developed by the library if the multivariate and multidimensional nature of organisational effectiveness is to be fully encompassed. In other words, the different perceptions of the organisation held by its various members must be incorporated into any assessment of its effectiveness. This membership extends far wider than the professional library staff who have in the past assumed the responsibility for assessing effectiveness, and who have, perhaps, inadvertently imposed their own perceptions of the 'good' organisation on the task and its parameters.

There is still a need for more research on perceptions of actual library performance held by groups such as academic staff, graduate and undergraduate students. Their assessments of library performance may provide a different set of dimensions of performance and could be used to revise the core set that have so far been developed.

Once a core set of dimensions has been adequately established and accepted by key stakeholders, the task will be to operationalise performance measures out of key indicators in each dimension. As in earlier studies (Calvert & Cullen, 1994; Van House & Childers, 1990), the first and highest loading indicator may be used as a surrogate for that dimension when a parsimonious set of performance measures is developed, since it most accurately represents the library's success or failure within that dimension. In a number of cases the indicator loading most highly is not easily (or practically) measurable. The stronger the parallels between dimensions deriving from factor analysis from a range of studies, the more confidence libraries can have in using a second or third indicator which clusters consistently in a number of studies in a particular dimension.

The library environment is an ever-changing one, and if this research and its findings are to be seen to be relevant then in time it will have to encompass new technologies. To an extent it already does. Those indicators that relate to electronic searching and delivery did not factorise into a separate dimension. Each emerged as an aspect of a dimension that relates to a task or service that the technology replaces or enhances. This seems, intuitively, to be correct. The dimensions are not immediately concerned with ways and means but with aspects of overall library performance that must continue to change and grow. The core dimensions: "Management Processes", "Resource Inputs", "Reference

Service", "Collection Assessment", "User Satisfaction", "Physical Access", "Physical Environment", etc., will continue to be the underlying dimensions of effectiveness. They will be addressed by a range of activities and by the use of different technologies in different times and contexts.

CHAPTER EIGHT

Service Quality in Libraries

The customer care movement of the 1990s was the most obvious manifestation of an increasing concern with the quality of customer service provided by both the private and public sectors. Retail outlets, service providers, and even government departments, became concerned about the quality of service provided for their customers and in many cases started to take action to improve it. In the first case, when an organisation decides to examine its service quality it is sometimes driven by an internal desire to improve, for a belief that service is 'good enough' does not inspire an organisation to improve and challenge itself (Hernon & Altman, 1998). Another motive, specific to the public sector, for addressing service quality might be a demand from government for greater accountability for the delivery of services to customers (who are often taxpayers and voters). A third motive, again specific to the public sector, is the expectation of greater revenue generation, resulting in more attention to customer service and other matters such as marketing, which have previously been the preserve of the private sector.

This chapter examines research conducted into improving service quality in libraries and information centres. The focus is the stream of library management thought based upon the belief that service quality is exactly what the customer says it is. Service quality examines the organisation from the customer's perspective and considers the customer's needs as paramount. It has its origins in services marketing, specifically the SERVQUAL model that will be discussed later. Since the mid-1990s the pioneering work of Hernon and Altman (1996) has prompted others to adopt similar or slightly variant approaches to service quality, the sum total of which is now a major body of thought within library and information science.

Service quality encompasses not only the intermediation function of library staff, but also the fitness of the collection to meet customer needs, the accessibility of the library and its collection in terms of opening hours, clear layout and signage, generous provision of catalogue workstations around the library, remote access to the catalogue with minimum downtime, and so on, all of which can be classified under three headings: *Information content, service environment,* and *staff*. Brophy and Coulling (1996) called for libraries to

recognise their customers as major stakeholders, though stakeholders are not the same as customers, and there are many stakeholder groups, e.g. funding agencies and elected representatives, which are not external customers in the true sense of the word.

8.1 Do We Have Customers?

Who are the people who come in through the doors of our libraries? Are they users, borrowers, patrons, readers, clients, customers, or what? The preference of a proactive library service is use of the term 'customer', for many other words are redolent of passive attitudes that focus on custodial care of the collection, with 'users' merely tolerated. The term 'client' favoured by special libraries is similar in many respects to 'customer' but implies a high level of personal service beyond the resources of many public sector libraries. Using the term 'client' in selected circumstances, such as personalised reference service, does not prevent the library from regarding the same people as customers. Libraries using the word 'customer' accept that individuals make choices about how to use their time, where to seek information and recreation, and whether or not they are comfortable with service providers. Many library managers now accept that they are in competition with services provided via the Internet, video rental chains, and the many various ways in which people can find information and recreation. To those who say that there is no competition for public sector libraries, the response should be that although customers at the mercy of public library service providers may show a sort of loyalty, it is at best a 'spurious loyalty' that may be expressed through lack of cooperation, anger and disruptiveness (Rowley & Dawes, 1999). Using the term 'customer' does not imply that the customer is always right. Retailers do not accept this cliché uncritically and nor should librarians. Sometimes customers make unrealistic demands upon the service provider and staff are placed in a difficult position; this has happened ever since the first libraries opened their doors and has nothing to do with the service quality movement. A library that surveys its service quality can convert the information it gathers into a customer service pledge (or charter, or whatever term is preferred) to give customers a clear idea of what level of service can be expected. This not only protects library staff from unreasonable expectations, it can help frame customer expectations and reduce some of their unreasonable demands.

One of the affective antecedents of loyalty is customer satisfaction. "Time and attention … are two of the most valuable assets that individuals have. Those who choose to spend

those assets in the library or in using library resources should be recognised and treasured as valued customers, especially those who are frequent ones" (Hernon & Altman, 1996). Rowley and Dawes (1999) point out that the connection between loyalty and satisfaction is far from straightforward but they acknowledge that intensity of satisfaction is an element of customer loyalty, though not necessarily as a direct ratio. This leads to an acceptance of the importance of service quality, and so to the attention it received from librarians and researchers in the 1990s.

8.2 Early Theories on Service Quality

Much of the early thinking about service quality emanated from Deming and the TQM movement in the manufacturing sector (Deming, 1986). Its applicability to service industries has sometimes been doubted, and indeed, there are problems in applying the quality concepts derived from manufacturing to services such as libraries. Here are three problem areas:

Intangible. Service includes a range of activities that are performance-based rather than objects, hence completely uniform measures or specifications can rarely be set. Our imperfect ability to count, measure, inventory, test, or verify many aspects of service in advance of sales or delivery mean that it becomes necessary to look for alternative ways to assess the quality of the service.

Heterogeneous. Service acts that depend upon human personnel will vary widely depending upon the deliverer, the customer, and even the day of the week. The organisation may wish to provide a uniform level of service, and even tell the customers what they can expect, but this will count for little if they have insufficient control over their own staff, whose performance can be variable at best and erratic at worst.

Inseparable. The production and the consumption of a service are often inseparable; usually both are performed at the time of actual delivery, which means that the customers must 'consume' the service along with the product. In service industries with a high level of customer participation, e.g. making a booking with a travel company, the customer has a considerable input to the process and can change it for better of worse, thus making it impossible for the provider to have absolute control over quality.

(Zeithaml, Parasuraman, & Berry, 1985).

Few will claim that all these problems have been solved or made insignificant. What has been done, though, is to discover new methods of discovering service quality that do not depend so much upon single acts or concrete deliverables. As will be explained later, the focus has shifted in favour of customer response to service delivery over a period of time, thus reducing the impact of individual staff or customer influence on any one transaction.

8.3 Four Dimensions of Service Quality

The intangibility of 'service quality' means that it has been hard to find commonly accepted definitions of the term. It seems easier to use multiple dimensions within a simple framework that describes the 'dimensions' of service quality and allows the organisation to select which is most suited to its purpose. Kroon's framework of four dimensions is very useful here. He said that "under a full corporate commitment to total quality, all four dimensions will be in use; most organizations will start by using one or two" (Kroon, 1995).

8.3.1 Quality as meeting expectations

In this model, service quality is exactly what the customer says it is. It is defined as the measure of how well the actual service matches the customer's expectations of the service. Typically, an organisation will ask customers for their judgement on what service should be like, and then they will ask them what kind of service they *perceive* they receive. Where there is a gap between the two there is a problem with service quality. This is the model that has received by far the most attention from librarians and LIS academics, and it will be discussed in more detail later in this chapter. Quinn (1997) said that expectations could only be assessed by professionals, yet we know that customers and librarians have different expectations of the library, and "If there is a lack of congruence between users' expectations and providers' expectations, service quality will suffer regardless of how well services are planned, delivered, and marketed" (Edwards & Browne, 1995). Hernon, Nitecki, and Altman (1999) said that the belief that librarians already know what customers want, need and expect is one reason they have been slow to accept the need to investigate service quality. The service quality approach does not mean that customers determine the library's mission or its objectives, nor do they write the strategic plan or allocate budgets, for those activities are all still correctly the preserves of professional librarians. The use of service quality lies in the paradigm shift that places customers and their *stated* preferences at the heart of library management. All too often, even those library managers that claim

to be customer-focussed are ready to make assumptions about what is expected of the library and what should be done, yet they can overlook individuals that don't currently use the library or whose use is less than optimal simply because they have not been recognised as customers whose expectations may not match what the library currently provides. It is easy for collection development and the provision of services to be determined more by tradition and inertia than as a response to customer demands. As an example, someone running a small business will not find much useful information in the average small public library in New Zealand, simply because it has not been done before and many library managers wouldn't consider it part of the library's role. As much as anything, assessing service quality in libraries is about accepting the customer-driven attitudes that prevail in the retail sector. As a simple example, a jewellery shop manager will attempt to attract new customers to the shop, and to keep customers in the shop for longer so that they purchase more jewellery. It does not mean that the jewellery shop will suddenly start stocking computer games in the hope of easy profits, only that it will do what it does currently but do it 'better' in the eyes of its customers. Similarly the library will remain a library, but it will be making a better match with customer expectations, and hope to keep their loyalty so that they will return another day.

8.3.2 Conformance quality

Deming, the father of Total Quality Management, considered service quality to be the reduction of errors, defects, and mistakes in the product or service provided to the customer (Deming, 1986). The internal focus of this dimension means that an organisation can implement changes to improve its conformance quality relatively easily; it is the easiest of the four dimensions in terms of task complexity. Inversely, its independence of the market cannot be viewed as a positive if the purpose is to improve customer responses to the service or product. The history of the Swiss watch market is as an example of how a highly respected industry can make the fundamental error of concentrating only upon improving its technical quality yet fail to spot a significant shift in consumer preferences.

In a service environment the focus must be on establishing a level of performance that is a compromise between what customers want and what the organisation can deliver within its resources. Then, to deliver the service the organisation must test its reliability in meeting its own specifications, and if it falls short it must make the necessary improvements. As an example, if a lending library determines that no customer should wait more than three minutes to check out an item yet it discovers it is not meeting this target, it should try to

identify the reasons for its failure and try to stabilise the process. Perhaps it needs to allocate more staff to the lending desk at peak periods, or reduce steps in the check out process, or make better use of automated systems, e.g. introduce a self-check machine. Whatever the conclusions of the review, the intention must be to reach the specified target. Another common example is the number of occasions customers complain that they have been sent an overdue reminder for an item they are sure has been returned. If the library investigates the reasons for this error it may uncover problems in staff performance at the returns desk, but equally likely are 'misreads' of bar-code labels caused by dirt on the wands or crumpled tape over the labels. Corrective action might lie in better staff motivation, or using extra staff so that all returns are read twice, or simply better maintenance of the labels and wands. A technological solution could be the implementation of RFID systems. Other examples of conformance quality in a library setting are: the number of catalogue records with incorrect call numbers, the number of incorrect referrals to another service counter in the library, and the amount of time an electronic service is 'down' each week due to server failure or maintenance work. Relevant to this, the ISO 9000 series includes a number of requirements which an organisation needs to fulfil to achieve customer satisfaction through consistent products and services which meet customer expectations (ISO, 2009). Some libraries have chosen to seek certification with ISO 9000, such as the Library of the Universidad Autonoma de Baja California (Lopez-Alvarez & Chavez-Comparan, 2006).

Earlier in section 2.4 reference was made to the Six Sigma business improvement method. This has been used to identify defects in library processes, though only a few examples can be found in the literature. Ohio State University Libraries used Lean Six Sigma to investigate its online reference service, which the librarians knew had flaws because some students waited twelve days for a response (Murphy, 2009). The intention was to maximise value and minimise costs for customers. After re-defining the purpose of the service and selecting the measures to use in its assessment, the library used a mixture of data gathering and analysis techniques, such as Pareto Charts, to identify weaknesses in the process. The online reference service performed poorly on several counts, the worst being the general failure of staff to follow-up a customer's question. With this knowledge managers can proceed with the improvement of the service.

There can be several benefits that result from improving conformance quality; increases in productivity; a reduction in rejected items; a decline in cost per unit; and an improvement

in staff morale. Yet all organisations have to balance out their responses to conformance quality. By reducing the waiting time on a help desk an information service may unintentionally give less attention to each individual caller and thus reduce customer satisfaction as a result. Obviously this is not the desired result and will require a rethink of how to stabilise performance.

8.3.3 Quality as market perceived

In this explanation of service quality the organisation is looking at customer evaluations of itself compared to competitor organisations and products, with the hope that an improved market share will follow on from higher customer perceptions relative to competitors. One method suggested by Kroon (1995), but not common in libraries, is asking customers to rank the importance of components of the service (rather similar to an 'expectations' survey), then asking them to rate company performance on those aspects relative to the competition. Perhaps library management does not value such information because they believe that their own libraries are not competing with other libraries. It is possible to view the organisation's position from two vantage points – relative to others overall, and by comparison with others on a functional basis. A low estimation by library managers of the importance of competition between libraries would explain the absence of benchmarking against 'competitors'. Most library benchmarking has been co-operative rather than competitive. Functional benchmarking, in which the organisation compares itself against a world class or otherwise highly regarded organisation that performs a similar functional activity, has been used within the library world, but seldom has a library compared itself to organisations *outside* the library world. If this were done it would mean comparing the library's staff assistance function with the best retail outlet in town, or evaluating the service orientation of the library's Web pages against a success story such as Amazon.com to see what can be learned from the comparison.

8.3.4 Strategic quality

This refers to the combination of price and quality the company wants to provide to the market and is dependent upon its organisational mission and strategic positioning. In *this* context 'quality' refers to premium products, e.g. a seat in the first-class cabin of an aircraft, or a silk shirt. In a competitive market some organisations choose the quality-price position to serve the top quality (i.e. premium product) segment and don't hesitate to set high prices for their goods and services, whereas others will select a lower price and presumably lower quality end of the market spectrum. Some, for example Rolls Royce,

have chosen to serve the top quality segment of the motorcar market with prices to match, whereas other car manufacturers will select a lower price and presumably lower quality end of the market spectrum. Although the organisation may not admit it is offering lower quality (a lesser product), realistically that is often the case, though there are examples of low or even zero-priced products and services being exactly what the customers want and expect, hence the use of the term 'quality' in this respect becomes less clear. If a customer believes that a polyester shirt matches his needs and he doesn't need a silk shirt, then that would be 'quality' in the context used elsewhere in this chapter. The implications of this model for library managers has surely increased with the appearance of more and more charges for loans, value-added reference services, and access to electronic services. Considering that most libraries must stretch their budgets to try to provide a wide range of services to a very diverse range of customer groups, it becomes inevitable that choices have to be made between the 'free' services offered with limited quality control that compete at the lowest end of the market spectrum and whose rivals are broadcast television, free access Internet services, and so on, compared to charged added-value services, such as the 'bestseller' collections and business information services, for which the competition is from bookshops, information brokers and fee-based Internet services.

8.4 The Expectations Model

In an early development of this model Gronroos (1982) said that customers compare the service they expect with perceptions of the service they receive when evaluating service quality. It needs to be emphasised that customers can hardly say what level of service they receive *except* by giving their perceptions. The disconfirmation paradigm, which states that customer beliefs about service quality are related to the size and direction of the disconfirmation experience, or failure to meet expectations, now dominates discussion of service quality in LIS. If this division for service is accepted, it could be paralleled with a concern about performance measurement stated by Moullin (2004) that it is important to have a balance between 'perception measures' which are gathered directly from service users and other stakeholders, and 'performance indicators' that are recorded directly by observation. A customer might wait for two minutes at a service desk, so it might be useful to get the data confirming this, but unless the organisation considers the customer perception, which might be that two minutes is acceptable or too long, then the indicator on its own has minimal value.

Gronroos said that two types of service quality exist: technical quality, or what the customer actually receives; and functional quality, or the process of delivery. Lehtinen and Lehtinen (1982) listed service quality components as physical quality (buildings, equipment, and other physical aspects of service), interactive quality (the meeting between staff and customers), and a third dimension of corporate quality (the company's image or reputation that can often result from the other aspects of service, but which in turn starts to influence customer's perceptions of what they have received or will receive from the organisation). These theories have been absorbed into current thinking. But probably the most influential writers about service quality are Parasuraman, Zeithaml, and Berry, the authors of the SERVQUAL model and instrument. They first propounded their theory in a 1985 article reporting on an investigation of four service industries (retail banking, credit card, securities brokerage, and product repair and maintenance). Regardless of the type of service they found that consumers used much the same criteria when evaluating service quality, so that it could be reduced to ten basic "determinants of service quality" (Parasuraman, Zeithaml, & Berry, 1985). The ten were: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibles. The same authors later reduced this list to five service quality dimensions of:

- Tangibles — Physical facilities, equipment, and appearance of personnel.
- Reliability — Ability to perform the promised service dependably and accurately.
- Responsiveness — Willingness to help customers and provide prompt service.
- Assurance — Knowledge and courtesy of employees and their ability to inspire trust and confidence.
- Empathy — Caring, individualised attention the firm provides its customers.

(Parasuraman, Zeithaml, & Berry, 1988)

The five new dimensions captured facets of the ten original dimensions. The dimensions were tested for, and were proven to have, high reliability and validity (Parasuraman, Berry, & Zeithaml, 1991).

In practice, a service quality survey will ask customers to complete a questionnaire listing the 22 statements in the SERVQUAL instrument. Each statement is put to the respondent twice, once to measure expectations and once to measure perceptions of performance (as provided by the firm or institution being assessed). Respondents will rate both forms of

the statement on a Likert scale ranging from 'strongly agree' to 'strongly disagree'; the SERVQUAL instrument uses a seven point scale. Each respondent's rating for expectations is then subtracted from the same respondent's perceptions rating, giving a score for the 'gap' for each individual on each statement. Each individual's gap score is of no great value, however, and only when all the separate gaps have been totalled and a mean calculated for all respondents does the figure have real meaning. The normal calculation used is performance minus expectations or P – E, though in practice the opposite (E – P) is often used instead, for the original will produce mostly negative scores, whereas E – P will produce positive scores that seem easier to interpret. It is the gap score that defines the SERVQUAL instrument.

Early satisfaction literature viewed expectation as *predictions* made by consumers abut what is likely to happen during a forthcoming transaction (e.g. Oliver, 1981), whereas the service quality literature argues that expectations are desires or wants of consumers, i.e. what they feel a service provider *should* offer rather than *would* offer. Frequent users of a service will form perceptions of the quality that they expect to be provided. If their 'foretold' expectation is low then they may hold low expectations from the service. As an example, twenty-five years ago it would have been accurate to say that a traveller waiting to catch a British Rail train would have expected it, on past experience, to be delayed. If that customer completed an 'expectations' survey using 'foretold' expectations then he/she would have given a low rating for punctuality. Yet if the train was, indeed, behind schedule (as expected), the customer would have been in no way satisfied with the service delivered by the organisation. This means that low foretold expectations do not display the sort of gap that management needs in order to identify areas that require improvement in performance. The SERVQUAL authors always wanted to use 'desired' expectations in the analysis of service quality, yet they have observed some difficulties with their original questions. In 1991 the formulation was changed so that questions and statements now try to capture 'realistic' not 'idealistic' notions of expectations.

8.5 Satisfaction

Discussions on service quality have frequently been clouded by a lack of precision in terminology. Commonly 'service quality' is confused with 'satisfaction'. There is some evidence of a move to accept the definitions put forward by Hernon and Whiteman (2001).

- Satisfaction is a sense of contentment that arises from an actual experience in relation to an *expected* experience … The degree to which expectations conform to or deviate from experience is the pivotal determination of satisfaction.
- Service quality also looks at actual versus expected experience, but the focus of service quality is to compare objectively what one wishes as an idealized service attribute with the current condition of that attribute. The process of making such a comparison involves an objective comparison between an ideal possibility and its present reality.

Service quality, in this definition, cannot be judged after a single experience of the service. One transaction may result in low satisfaction, but it takes several such encounters before the customer can judge service quality.

The Hernon-Whiteman distinction between satisfaction and service quality is similar to the view put forward by Oliver but in which he uses the term 'attitude' rather than service quality. "Attitude is the consumer's relatively enduring effective orientation for a product, store, or process (e.g. customer service) while satisfaction is the emotional reaction following a disconfirmation experience which acts on the base level attitude and is consumption-specific. Attitude is therefore measured in terms more general to product or store and is less situationally oriented" (Oliver, 1981).

8.6 SERVQUAL in Libraries

Nitecki summarised the uses of SERVQUAL in libraries up to 1997. Her conclusion was that the SERVQUAL model has been used in libraries for several years, and research showed it "offers service providers a diagnostic tool to assess what is important to meet or exceed their readers' expectations for service quality and a monitor of how well they do so" (Nitecki, 1998). Of eight studies, five investigated inter-library loan or reference services while the three others were more general in scope.

The question of 'importance' has been raised by authors concerned that gap analysis on its own can give excessive weight to minor aspects of performance at the expense of items that customers felt about more deeply. Carman (1990) suggested gathering information about the importance customers attached to each dimension and then using the data to balance each dimension's performance score with its importance. If, for example, the gap

analysis showed a larger gap on 'tangibles' than on 'reliability', yet customers attached more importance to aspects of reliability, the weighting would correct the imbalance in the original score.

The idea of a 'zone of tolerance' has been introduced to gap analysis. This assumes that customers do not compare their perceptions of performance only with expectations of excellent service, they also have a lower level of expectation which some providers may feel is closer to reality – what can be provided in the real world. Use of the "zone of tolerance" was first adopted in the library and information service sector by librarians who surveyed their customers using SERVQUAL statements slightly modified to an academic library context, and against which the customer indicated his/her *minimum*, perceived, and desired service acceptance levels on a nine point scale. The intention was to measure quality as whether of not perceived performance falls within the 'zone of tolerance' between minimum and desired levels, even though there is no set range for the zone of tolerance because it is dependent upon the customers' responses. The study found customers rated the library's performance below the zone of tolerance on six out of 22 statements, most of them from the 'reliability' dimension (Coleman, Xiao, Blair, & Chollett, 1997). Yet a study by McDougall and Levesque (1992) found a high correlation exists between SERVQUAL expectations and importance, making it doubtful if adding a third rating to the survey instrument will produce more accurate results or if the extra confusion caused to respondents might negate its value.

8.6.1 The Hernon-Altman model

SERVQUAL has proved remarkably robust when used in a wide variety of service environments but it can be criticised for the generality of its 22 statements. Hernon and Altman (1996) established a model that is similar in the use of method, but different in its details. Part of their intention was to create an instrument more closely suited to the library world, and there can be little doubt that they have achieved that objective. Their method was to conduct interviews and focus groups among university library staff and customers with the intention of discovering customer opinions about the key elements of service quality. This knowledge was used to write a list of new statements that describe library operations, functions, and environments in some detail, e.g.

- I feel safe in the building
- I find displays of new materials helpful
- I find the humidity in the building comfortable

Some of the statements were 'closed' by means of a device such as "I do not have to wait more than three minutes for …" By allowing for flexibility in the statements used in local surveys, Hernon and Altman pioneered a method of comparing customer expectations with objective indicators of service quality.

The statements have been further tested in the United States of America, New Zealand, Singapore (Calvert, 1998) and the People's Republic of China (Calvert, 2001). With each iteration, minor variations are found between one country and the next, but there is nonetheless considerable similarity in responses from staff and customers around the world. The SERVQUAL authors would probably have some sympathy for this, for they said "While SERVQUAL can be used in its present form to assess and compare service quality across a wide variety of firms or units within a firm, appropriate adaptation of the instrument may be desirable when only a single service is investigated" (Parasuraman, Zeithaml, & Berry, 1988). They would, it seems, have no objection to the case study approach first devised by Hernon and Altman.

Methods for evaluating service quality in libraries continue to evolve as more librarians become involved and more research is completed. To all those concerned with the development of methods for assessing service quality in libraries, possibly the most significant trend they could detect in recent years is the shift in emphasis from organisational to customer perspectives (Hernon & Altman, 1996). This requires a paradigm shift in thinking on the part of library managers who have traditionally thought of the library as a temple of learning, but who have probably never thought of the library as being similar in nature to a magazine shop, video store, or Internet café. Yet it is analogues such as these that have started to shape management thinking, and greater attention to service quality is an essential part of the change. Doyle (1995) detected a change from objective to subjective measures in library management, and Hernon and Altman (1996) saw a move from input and output measures (typically budget and circulation data) to outcome and impact measures, of which, he said, service quality is a major component.

One historical trend is the change that has librarians thinking beyond the library as a building with physical collections toward an appreciation of service in the virtual library (Hernon, Nitecki, & Altman, 1999). This might seem somewhat contradictory to the greater emphasis placed on service quality in a conventional setting, yet customers of a

virtual library still depend upon staff to design a friendly and intuitive interface, to assist them with navigation aids, to organise documents so that they are easy to find, to ensure there is a minimum of downtime (a server down is the virtual equivalent of closed library doors), and to assist when things go wrong. All that changes is the specific nature of the service, not the need for good service.

8.6.2 The Association of Research Libraries initiative

In 1999 the Association of Research Libraries (ARL) initiated a pilot project to assess service quality in North American research libraries. The motivation was a request from library directors to find alternatives to traditional measures of library performance (which, as described above, have for many years been based upon inputs and simple outputs) that are now seen to be at variance with demands for evaluation. The pilot project was based upon the SERVQUAL work done over a number of years at Texas A&M University by a team led by Fred Heath and Colleen Cook. It used an instrument called LibQUAL+ (2004), a derivative of SERVQUAL.

The Texas A&M research suggested that instead of SERVQUAL's five dimensions, library service quality can be reduced to three key dimensions:

- Tangibles — the appearance of physical facilities, equipment, personnel, and communication materials;
- Reliability — the ability to perform the promised service dependably and accurately;
- Affect of library service — which combines the more subjective aspects of library service, such as responsiveness, assurance, and empathy.

Interviews with faculty, graduate and undergraduate students aided further refinement of the new instrument by suggesting that two new dimensions, 'collections' and 'library as place' be added to the three listed above (Cook, Heath, Thompson & Thompson, 2001).

The pilot project used random sampling designed to give roughly equal weighting to responses by faculty, graduate students and undergraduate students within each university that participated. Interestingly, Web-based surveying was used and the system coped with a large number of responses (about 5000) with no major problems. Once all the data had been analysed ARL moved on the a new stage in the process in which LibQUAL+ was tested in a large number of universities with the intention of evaluating its utility as a 'best

practices' tool for research libraries. It is recognised that this kind of method is not well suited to immediate cross-institutional comparisons, but library managers are forever seeking to compare the performance of their library with that of others. There has been steady change with LibQUAL, but it is still much the same instrument that was first exhibited in 2000.

8.7 Using Service Quality Information

Managers often underestimate the value to a library of a good reputation. "Recognition of repeat customers is important for the success of most organizations. Frequent customers tend to be loyal. They have proven their interest in reading and seeking information. They return regularly, recommend library collections and services to their friends and colleagues, and tend to be forgiving when the system errs. They can also influence public perception of the library's reputation, since they not only use the library frequently, but also tell others about it" (Altman & Hernon, 1998). It is probably too simplistic to suggest that service quality leads to loyalty, if loyalty is manifested as repeat patronage. To Rowley and Dawes (1999), customer loyalty is a complex concept that can be manifested in ways other than behavioural patterns such as repeat visits, and they suggest that attitudes such as support for petitions in favour of libraries threatened with closure may be a helpful outcome from loyalty. They say that loyalty has three antecedents: cognitive, i.e. rational; affective, associated with feelings about the service; and conative, associated with behavioural disposition. It is easy to see the closeness of the first of these (cognitive) with customer responses to the objective aspects of service that Gronroos called technical quality (1982), while the second (affective) follows closely upon functional quality (Kroon, 1995). The third item on the list, conative, has no immediate parallel in service quality literature, though most library staff on the front desk will immediately recognise it!

When library managers that take the time and trouble to assess service quality they will find it is applicable in numerous ways. As an example, it can be utilised in the writing of a customer service agreement or pledge that can help shape customers' expectations and curb excessive expectations of the service. It can help with the allocation of library resources, for example, away from activities or functions with low customer expectations (let us say 'pot plants around the library') to those elements of service delivery with high expectations, e.g. faster reshelving of materials in high demand, or better temperature control in the library building. It will be influential in staff training, perhaps encouraging

the use of behavioural methods such as greeting customers as they enter the library, or always asking "is that all?" at the conclusion of a transaction.

8.8 Conclusion

Currently the ARL initiative is probably the most significant development in the field of library service quality, if only for the sheer size of its budget and the number of participants. The volume of data being generated is providing its research team with ample opportunity to produce results that will be of interest to all academic librarians around the world. Similarly, the Yale research of Nitecki based upon the Hernon-Altman method produced useful data (Nitecki & Hernon, 2000). Yet there remain other areas for investigation in the future. The use of conformance as service quality in libraries is still poorly understood, yet use of measures such as downtime of an online database, the number of errors made in the circulation area, e.g. false overdue messages sent out, and the number of errors in the catalogue, are all conformance measures of service quality. Once better understood and developed, these could be used in conjunction with data derived from customer surveys using the gap analysis method. As an extension of this suggestion for research, the use of complaints as a means of discovering customer expectations is not used extensively, perhaps because most managers have an instinctive dislike of complaints. Yet the amount of detail they provide about service failures should be employed to best advantage and for the elimination of further causes for complaint.

Service quality is a moving target. Customer expectations change with time and it is hard to predict how that change will occur. The library manager does not know whether change is the result of technological developments or societal shifts. Yet in a way it does not matter, for by monitoring service quality continuously the manager will be in a strong position to re-allocate resources to aspects of service demanded by customers. The library manager remains in charge of the library, but should be influenced by known expectations of the library's customers and will need tools and techniques for discovering service quality and implementing change based upon the knowledge it brings.

Chapters Nine and Ten describe research using the Hernon-Altman method that developed a tool for evaluating university library service quality, and Chapter Eleven describes research that developed an instrument for assessing electronic service quality.

CHAPTER NINE

Measuring Service Quality in University Libraries

The research described in this chapter is built upon the work of Hernon and Altman (1996) who created a conceptual framework for assessing and understanding service quality in university libraries by means of gap analysis (see Chapter Eight). They explored the use of a data collection instrument similar to, but different from the SERVQUAL instrument. This research built upon that initial work by:

- Producing a set of statements that better represents the Hernon and Altman conceptual framework, and in doing so, offers university libraries more choice about the expectations they might decide to meet or set out to raise;
- Suggesting ways by which libraries can review their own service quality and set priorities for resource allocation intended to improve service quality;
- Identifying a multi-method approach to measuring and understanding service quality from the perspectives of multiple constituencies; such approach comprising both self-reporting and factual techniques that are easy to adopt in university libraries and that produce results meaningful to library managers.

It was realised that the research needed a bridge to practice, and what the library managers needed was a pool of statements and a method for distributing them, that would help them evaluate the service quality in their libraries. The essential objective of this research was to provide university librarians in New Zealand, and academic librarians elsewhere, with a flexible tool and methods for assessing customer expectations. As a result, library managers can produce benchmarks for internal use (perhaps a few standard questions taken from Figure 3, that are used in a survey of library customers each year to see if service quality is being maintained), while meeting those expectations of highest priority. This is because service quality is not a static response to customers. It requires constant evaluation, because once a service organisation meets certain expectations, new ones arise, partly as a result of societal changes in expectations, and sometimes because of technological shifts in service delivery.

It is possible to assess the library's provision of collection, services, and facilities from different vantage points. Adopting an organisational perspective, for example, library

managers might examine issues of extensiveness, efficiency, or effectiveness, perhaps within a cost framework (e.g. cost-benefit). Using a customer perspective they might examine service quality, or the different concept of satisfaction (see Chapter Eight). One method of evaluation does not preclude the use of others; rather, each offers different insights and opportunities to engage in planning and improved decision making relevant to matters such as resource allocation and staff training.

Gap reduction is one aspect of service quality. Excellence is another, recognised in the United States by the Malcolm Baldridge National Quality Award. The research described here examines service quality but not excellence. Initially Hernon considered excellence to be synonymous with service quality (Hernon & Altman, 1996), but he amended this somewhat to say that "excellence is an important but elusive dimension of quality" (Hernon & Altman, 1998, p. 215). Excellence, the authors said, could be recognised, but needed new methods of examination and measurement. Other researchers might pursue the attributes of excellence, with the intention of developing techniques and appropriate outcome measures. There is also scope to investigate service quality as perceived by internal customers (e.g. how do reference service staff perceive the service quality provided by technical service staff?). Subsequent research by Hernon and Calvert (2005) developed a data collection instrument for special constituencies within the general population. The purpose of the study described in this chapter was to develop a generic set of statements that addresses *resources - information content; the organisation – its service environment and resource delivery;* and *service delivery – staff*, and methods adaptable to a variety of circumstances and situations. In effect, this research provides a foundation for libraries implementing programmes of service quality or beginning to evaluate and reduce the extent of the gap.

9.1 Method

The research started with the components identified by Hernon and Altman (1996) and developed an extensive, but representative, survey instrument with a variety of statements that could be used to assess service quality. Some statements were refined by reference to the existing literature. The instrument regards a library as a system in which the various departments devoted to technical and public services cooperate to meet the needs and expectations of the library's external customers; both those visiting the library, and those accessing collections and services remotely.

After a pre-test of the instrument on students in the Department of Library and Information Studies at Victoria University of Wellington, the research proper began with a series of focus group interviews at the (then) seven university libraries in New Zealand. Sixty-nine librarians participated in the interviews, the purpose of which was to review the survey instrument from the perspective and needs of providers, and to make revisions where necessary. Revision was made after each focus group was concluded and took the form of rewriting and re-ordering statements, and adding new statements (with some deletions). The purpose was to produce an instrument reflective of those elements about which librarians thought customers might provide useful insights. The full list of statements is given at the end this chapter.

Focus group participants were evenly divided about the inclusion of statement 3, "The information I get from library materials is accurate". Some maintained that librarians had a responsibility to provide accurate information, whereas those who disagreed maintained that, by focussing on accuracy, librarians would be engaged in censorship and limiting collections to selected types of information resources. Furthermore, they questioned how all resources could be viewed within the narrow context of accuracy, and how librarians could verify the accuracy of content in all the documents held by the library. Subsequent to this research, many university libraries now provide customers with services such as 'links' to suitable Web sites, but in line with the thinking of the librarians concerned about their responsibility for inaccurate information, it can be assumed that the same librarians would argue that they can take little responsibility for the accuracy of content in World Wide Web sites found through linkage from a library's Web site. Because participants in the Hernon and Altman focus groups stressed the importance of accuracy, and because insights into false expectations might suggest important areas to address in user education programmes, that statement remained in the survey instrument. As already explained, library managers can select that statement, or any others, as they deem important.

Subsequent to the focus groups, the revised questionnaire containing 61 statements was then tested on 500 library customers at two universities in New Zealand (Lincoln and Victoria). This chapter does not report the survey findings (they are in Chapter Ten): rather, the statements were reviewed once more, but from a different perspective. Thus, the list of statements at the end of this chapter emerged from a pre-test of students in the Library and Information Studies programme at Victoria University of Wellington, focus

group interviews with practising librarians at seven universities, and pretesting on library customers at two universities. The final tests indicated the necessity of reminding those completing any form to comment on expectations, not on the actual service provided. This research recommended that any survey of constituent groups not exceed two pages. After an initial page introducing the purpose of the questionnaire, the second page should begin with the reminder:

> Please circle the number that indicates how important each of the following points is for the high-quality service that you expect a university library to provide.

As well, it should note that 1 stands for 'no importance' and 7 for 'highest importance'.

9.2 Recommendations

Libraries intending to adapt the instrument to accommodate their local situation and service priorities should reduce the number of statements asked, perhaps even using alternative statements; alter the wording as appropriate to local parlance; conduct a pre-test to ensure the clarity of thought expressed in the statements; and match each statement to service priorities. Library staff will need to review statements such as number 20 relating to the amount of time customers have to wait to use a service or item of equipment. The generic time used in the statements is three minutes, but this might turn out to be a long while to wait to reach the circulation counter, but not long for a reference enquiry – the local library manager would have to test and make his/her own judgement on a fair time limit for each activity. Having set a time frame, observers could monitor service points and use a stopwatch to time queuing patterns. Managers have to remember, though, that linking time and service in a survey implies a willingness to act upon the service implications of the results. They could also walk around the library checking on the conditions of facilities and the extent to which staff re-shelve material in a timely manner. A mystery shopper might also be used to test certain aspects of customer service (Calvert, 2005).[8] This method would be particularly useful for assessing physical conditions, such as the toilets and drinking fountains included in statements 46 – 49. Hernon and Altman (1996) noted that a library could check with the library's telephone company to identify the

[8] "A mystery shopper is a freelance, professional shopper hired by large retail, restaurant, and movie theater chains to check up on their local stores, in order to make sure that customer service is good, stores are clean, etc. Typically, a mystery shopper will check on a store by actually going in and purchasing an item. They will have a report sheet in which they are asked a variety of questions about their experience. After a mystery shopper has checked a score, this person then turns in the report, which is given a score and sent to management. These reports are also often shared with the employees so that they have a better idea of their own strengths and weaknesses." Definition from Wikipedia http://en.wikipedia.org/wiki/Mystery_shopper.

number of calls resulting in a 'busy' signal. Librarians might even take a sample of topics popular with students, identify a representative set of books and articles on each topic, and check the collection to see if they experience any problems with retrieval of items, or discover mutilated or lost items. As is evident, the statements in Figure 3 offer a method for gathering self-reported expectations. Using other techniques librarians can gain insights into the actual situation – comparing the gap between expectations and services provided. They can then take corrective action to reduce that gap.

Librarians might also take key findings from the local survey and conduct focus group interviews with selected customers. The purpose would be to probe those findings and to place self-reporting in its proper context. As an example, a library might include statement number 37 "Study areas in the library are kept quiet" in a survey, and then be surprised that customers have given high expectations to this statement, but low perceived performance. The presence of the gap alone should alert managers to a problem, but on its own it is not sufficient to point to a specific cause of the problem in the library. Focus groups could explore this, and, to pursue the example, might say that shelving assistants talking too loudly caused the noise problem, or that lift doors were too noisy. With this information, library managers can look for solutions. Library staff might themselves become focus group participants and explore their reactions to customer expectations and possible procedures for meeting those (selected) expectations. As well, staff members might review various statements from the list and examine the extent to which they would agree to be held accountable for particular aspects of service quality.

As an example of this, library staff in the focus groups conducted at the start of this research (see earlier this chapter) were reluctant to make a commitment to statements 12 and 13 regarding interlibrary loan. Because an interlibrary loan is sent to another organisation for fulfilment, once the request is sent the librarian does not know how long it will be before the requested document arrives, so staff were unwilling to be held accountable for a particular timeframe. In other words they were prepared to rationalise their inability to implement a change in the quality of the service. Instead they could have accepted the problems of meeting customer expectations for the prompt receipt of material as an opportunity to review and improve the service. Staff might test the amount of time needed to receive material through interlibrary loan and take steps to reduce or eliminate delays, such as looking for alternative suppliers, or instigating patron-initiated interloan that does not require staff intermediation.

The researchers did not explore the use of various demographic variables, but the assumption underlying the research is that librarians will select those statements most relevant to their particular needs. This becomes most important as other researchers refine the instrument and techniques discussed here and apply them to other library sectors (e.g. public libraries), and other countries. As well, terminology may change because the New Zealand statements use the specific terminology of the country's working practices, and some of the terms used in the statements will not be understood in other countries.

An apparent problem is that libraries use technologies, and the technologies will change with time. To reflect this, further research was conducted about ten years after the initial research, and it is described in Chapter Eleven, showing how the same method can be used to develop a service quality instrument for a different purpose, this one for evaluating service quality of the library's electronic services.

Researchers and others should develop separate instruments for examining internal customers and special customer groups, such as students receiving bibliographic instruction, or students studying at a distance. A statement, for example, relating to maintaining eye contact is inappropriate in some cultures and would be considered as poor service, rather than good. Clearly, service quality is a complex and multi-faceted concept and one set of statements cannot address *all* the expectations that libraries might consider relevant.

9.3 Conclusion

As has just been stated above, it is not possible to develop a single generic instrument applicable in all libraries and for all circumstances, but this research has provided a research-based pool of statements which can be used a starting point and then developed further. Service quality is largely a local matter, so library managers can set benchmarks within the organisation, and any potential for comparison with other institutions is strictly limited. Through the use of assorted methods of data collection and a comparison of expectations to the service quality provided, librarians ensure that they are aware of the most important areas for improvement.

Libraries will have to decide which commitments and promises to make and honour; however, the premise of service quality is that they should make those decisions based upon empirical evidence, and then allocate resources accordingly. The implication of this is that assessing service quality should inform planning decisions. A start is the service pledges made by some academic libraries, such as Wright State University Library (Wehmeyer, Auchtor & Hirshon, 1996), which link service pledges to accountability and to outcomes. However, before investigating the expectations of external customers, libraries could examine internal customers and their commitment to service quality. Good service begins internally and spreads outward. "Quality is everyone's job. But it's management's responsibility" (Guaspari, 1985, p. 65).

Figure 3: The service quality instrument

The survey instrument begins with this text:

We ask you to spare about [insert] minutes of your time to identify what you think are the most important indicators of high-quality service which you expect a university library to provide. Some indicators are probably more important to you than others.

The information you provide will enable us to understand your service needs and priorities.

Please circle the number that indicates how important each of the following features is for high-quality service that you expect a university library to provide. (The range is from 1 = of no importance to 7 = of highest importance.)

The selected statements then follow with a Likert scale from 1 to 7 available for each statement.

1. The range of materials held by the library meets my course needs.
2. The library purchases new materials that are relevant to my course needs.
3. The information I get from library materials is accurate.
4. It is easy to find where materials (books, journals, videos, maps, etc.) are located in the building.
5. The materials I want are in their proper places on the shelves.

6. Materials are re-shelved promptly.
7. The library material I need is in good condition (e.g. not brittle or falling apart).
8. The material I need has not been mutilated (e.g. torn pages or highlighted text).
9. The material I need from the short-tem loan collection (i.e. course materials held in the study hall or similar location) is usually available to me when I want it.
10. When academic staff request that material be placed on short-term loan, it is done promptly.
11. If I make a recommendation for the purchase of new material, staff provide me with feedback on whether it is ordered and when it is received.
12. When I request material, I am told how long it will take to arrive:
    a. by interloan
    b. from storage
    c. it is currently on loan.
13. Material I requested comes within the time frame quoted:
    a. by interloan
    b. from storage
    c. it is currently on loan.
14. Library staff are:
    a. approachable and welcoming
    b. courteous and polite
    c. friendly and easy to talk to
    d. available when I need them
    e. willing to leave the desk area to help me
15. Library staff:
    a. demonstrate and teach the use of electronic resources (e.g. CD-ROMs and electronic databases)
    b. personally help me to use electronic resources
    c. help me to select appropriate electronic resources
    d. demonstrate cultural sensitivity
    e. direct me to library brochures and helpsheets
    f. do not overwhelm me with too much information and detail
    g. encourage me to come back to ask for more assistance if I need it
    h. give accurate answers to my questions
    i. mention interloan as a means to obtain materials that the library does not have
    j. offer suggestions on where to look for information in other parts of the library

k. offer suggestions on where to look for information outside the library

m. show me how to use the online library catalogue (OPAC)

n. take me to where the material is shelved instead of just pointing or telling where to go

o. understand what information I am looking for

16. All public service desks throughout the library are served by knowledgeable staff
17. Knowledgeable staff are available to assist whenever the library is open.
18. Staff communicate with me using terms I understand.
19. Librarians provide teaching programmes that enable me to make more effective use of library materials and services.
20. I do not have to wait more than three minutes when I:
    a. ask for assistance at a reference enquiry desk
    b. borrow material
    c. need to print from a computer
    d. phone the library for assistance or information
    e. use microfilm and microfiche readers
    f. use the online library catalogue (OPAC)
    g. use photocopiers
    h. use self-issue machines
    i. use the short-term loan collection
    j. use electronic resources (e.g. CD-ROMs and electronic databases)
21. Accurate and helpful written instructions are available next to all equipment.
22. Equipment is in good working order:
    a. audiovisual (e.g. video players and slide projectors)
    b. CD-ROM and database computers
    c. computer printers
    d. microfilm and microfiche readers
    e. multimedia / interactive computers
    f. online library catalogue (OPAC) computers
    g. photocopiers
    h. self-issue machines.
23. The library provides timely, accurate, and clear information about equipment, which is not in working order.
24. The library provides personal computers for me to use within the building.
25. Online library catalogue computers are conveniently distributed throughout the library.

26. I can gain easy access to the online library catalogue and other electronic resources from outside the library buildings.
27. Instructions on remote access to the online library catalogue are easy to follow.
28. When I connect remotely to the online library catalogue I do not get a busy signal or get disconnected.
29. Using the online library catalogue I can:
    a. request materials
    b. renew materials.
30. The online library catalogue shows me materials I have:
    a. borrowed
    b. requested.
31. The information displayed on the online library catalogue computers is clear and easy to follow.
32. The online library catalogue has a 'Help' option that I can easily understand.
33. The online library catalogue displays information about material 'on order' and 'in process'.
34. The online library catalogue is an accurate source of information about all material held by the library.
35. The information displayed on the screen for other electronic sources (e.g. CD-ROMs) is clear and easy to follow.
36. The library's World Wide Web page contains correct and useful information about library services and materials.
37. Study areas in the library are kept quiet.
38. There are study areas where talking is permitted.
39. There are a sufficient number of group study rooms.
40. The library has an attractive interior.
41. Library furniture is:
    a. available (e.g. can find a seat or study desk)
    b. comfortable.
    c. functional.
42. When I enter the library I can see where I can go for help.
43. Directional signs in the library are clear, understandable, and helpful.
44. The hours when the library is open match my schedule and needs.
45. It is easy to find out, in advance, when the library is open.
46. There are a sufficient number of toilets in the building.

47. The toilets are clean.
48. There are a sufficient number of drinking fountains in the building.
49. The drinking fountains are clean.
50. I find the temperature in the building is comfortable.
51. I find the humidity in the building is comfortable.
52. I find the ventilation in the building is comfortable.
53. The lighting in the building is adequate to my needs.
54. The library provides services such as staplers, hole-punchers, pencil sharpeners, and giving change.
55. I feel safe in the building.
56. It is easy to make a compliment, complaint, or suggestion about library services or conditions.
57. The library acts promptly when I make a complaint.
58. Library brochures and helpsheets are helpful.
59. I find displays of new materials beneficial.

The list of statements can be followed by typical demographic information, and questions about full-time and part-time study, faculty enrolment, or any characteristic of the respondents that might be used to analyse the resulting data set further.

CHAPTER TEN

Surveying Service Quality in University Libraries

The first stage of the New Zealand university library service quality project was described in the last chapter. Using the Hernon and Altman framework (1996), the researchers developed a set of statements, each one describing a discrete aspect of service quality as it is experienced by customers in a university library. The list was refined by focus groups conducted with university library staff in New Zealand.

The research reported in this chapter had as its objectives:

- Producing a set of statements which refine and extend the generic framework developed by Hernon and Altman (1996), in the process providing library managers with greater choice of statements for local surveys;
- Suggesting ways by which librarians can examine their local situation and set service priorities that they might wish to meet;
- Identifying a multi-method approach to measuring service quality from the perspectives of multiple constituencies.

The intended outcome is to provide university librarians in New Zealand with a flexible tool for analysing and measuring customer expectations of service. It is anticipated that university libraries will use the tool to: (1) determine which expectations they regard as priorities and want to meet; (2) measure their own progress towards meeting those customer expectations; (3) review service policies; and (4) reassess resource allocation in the light of information about customer expectations. Although the tool has been designed only for the production of local benchmarks, it is possible for university libraries to compare their benchmarks with libraries sharing similar service priorities.

10.1 Method

The first stages of this research were reported in the previous chapter, and elsewhere (Hernon & Calvert, 1996). Even though the final version of the questionnaire (and the statements it contained) was the product of a very thorough qualitative research process, the researchers wanted to give it further practical testing to ensure that it was truly robust

and could be used in all university libraries. Thus, to test the instrument further it was administered as a survey in two university libraries and the responses analysed. This stage of the research was intended only as a different way of reviewing the survey instrument; however an important part of this examination was to see if it produced results that appeared to be useful and robust. The results are reported in this chapter.

The objectives of this stage of the research were to test the survey instrument to see if:

- there were any problems with the questionnaire and the methods recommended for its implementation;
- individual statements made sense to respondents;
- the results could be analysed by ranking the statements by the means of the responses;
- broad groups of statements could be identified which may reflect underlying *dimensions* of service quality.

The survey was conducted separately at two sites, Victoria University of Wellington and Lincoln University just outside Christchurch. At Victoria one member of the research team supervised the survey, while at Lincoln the Deputy University Librarian oversaw data collection. Students were recruited as research assistants to administer the survey, and they were paid a small sum in return. They were asked to walk around their respective libraries at different times of the working day, including evenings, asking customers to complete the questionnaire. Assistants were instructed to approach all external customers including academic staff, general staff, and external borrowers, but not *internal customers* (i.e. library staff), in a given area of the library and ask them to participate. An analysis of the results showed that this instruction was followed correctly. If customers showed some willingness to respond then the research assistant gave a brief explanation of the purpose and objectives of the research and left them with a questionnaire. Assistants returned after about ten minutes to collect the questionnaire.

In total there were 459 respondents, 306 at Victoria University of Wellington and 153 at Lincoln University. The sample sizes were not intended to achieve any specific level of significance within the respective populations. Results, therefore, are not generalisable. Data were entered into a database on a Vax machine running VMS, and then analysed using SAS.

10.2 Results

10.2.1 Administering the questionnaire

The researchers were satisfied that the first objective was tested and that the questionnaire can be administered efficiently. Assistants reported no difficulties with the administration of the questionnaire. Customers seemed to comprehend the purpose of the survey, and no one sought clarification of the actual questionnaire. It was anticipated that assistants could administer 20 questionnaires per hour. In fact, they usually coped with more than that, though the number varied between 20 and 30 depending upon the person. Time of day did not affect the speed of administration.

10.2.2 The statements on the questionnaire

The second project objective was to discover if customers experienced any difficulties in responding to individual statements. As a way of analysing this, the 10 statements with the lowest response rate were identified with a view to examining if there were any obvious difficulties in the wording or concepts implied in the statement. From even this simple analysis it is clear that statements 12 and 13 gave the greatest difficulty. They are related. Statement 12 says "When I request material I am told how long it will take to arrive"; this was intended to discover if delays in meeting Interloan or other requests, and the subsequent uncertainty, could be alleviated by stating a set time period for delivery. In the focus groups many of the service librarians had expressed dislike for this statement because, they argued, the time taken to satisfy an Interloan is beyond the control of the borrowing library, but that does not seem to explain the low response to all parts of this question. Statement 13 says "Material I requested comes within the time frame quoted," and it was, it was originally supposed, a simple matter of asking if time was a relevant measure of service quality. If a librarian has quoted a time frame for delivery (as in Q12) then the customer can assess the quality of service by using Q13. The original basis for this was Interloan, but it was extended by adding "from storage" and "if it is currently on loan" as two other sub-statements. What may explain the low response is that many students are not regular users of Interloan (and not allowed to use it in one of the surveyed libraries). Of the three parts there is no doubt that the concept of "from storage" caused the most difficulty. This was a phrase used to describe the material kept in stack areas or in rare book rooms that had to be requested by customers and then retrieved by staff. It seems that this concept was either poorly expressed in the questionnaire, or it is one not familiar to many of the respondents.

Perhaps with the passage of time the statement (Q36) asking about the library's World Wide Web page should no longer cause such difficulty, or at least, low response. At the time of the survey both libraries had prototype Web pages but these may not have been familiar to customers. Two sub-statements on equipment (13C and 22E) suggest, perhaps, that the specific types of machines are not in frequent use, or that the concept of 'multimedia/interactive computers' is not clearly expressed (Victoria had no computers named as such). To update this knowledge, Chapter Eleven describes research done some years after the project described here, and it sought to discover more about service quality of electronic services in academic libraries.

Oddly enough, two statements that mentioned 'self-issue machines' (Q20 and Q22) did not appear to pose much difficulty even though there were no such machines at Victoria at the time of the survey. This may suggest that if a name or concept is reasonably self-explanatory then customers feel able to comment upon them even if they have no direct experience. It should be pointed out that it is quite valid for respondents to rank those statements on their questionnaires even if they do not use a service or product, because the survey asks for perceptions of good customer service, not for a ranking of actual service provision.

10.2.3 The value of ranking statements

Statements were ranked according to the mean of all responses, from highest to lowest. In the original analysis the means were calculated to the fifth point after the decimal though in Table 21 this is reduced to two points after the decimal. In the original ranked list there were six pairs of statements that could not be separated until the fourth decimal point. Considered along with the rather large figures for standard deviation it is apparent that specific places within the ranked list are not always significant. At the top and the bottom of the ranked list where statements are separated from each other by a greater difference in the mean, the ranking can be accepted with greater confidence.

It is interesting to note that the third statement in the rankings is "The information I get from library materials is accurate". Inclusion of this statement in the survey was challenged by librarians during the focus groups, some of whom maintained that material could not be checked for accuracy, and that any attempt to focus upon accuracy would result in collections being censored (see Chapter Nine). Its ranking is some vindication of the

decision to include it in the survey. The tenth most highly ranked statement, "Library staff give accurate answers to my questions" lends further support.

The high ranking of other statements are more predictable. The statements about availability of furniture, lighting levels, and equipment reliability reflected concerns expressed in the focus groups at both universities.

In the top 20 statements is an obvious concern with the study environment. There are three statements about library furniture (ranked 1st, 6th and 14th). Lighting (2nd), temperature (16th) and ventilation (19th) are all aspects of the environment ranked quite highly. The important of equipment being maintained shows in statements about the catalogue computers (4th), photocopiers (5th), printers (15th), and database computers (17th).

The statement "I feel safe in the building" ranked 20th in the combined table, but when the two libraries were analysed separately this statement ranked higher in the city library than in the rural library (17th against 35th), suggesting that this is a concern that needs addressing in urban libraries.

A noticeable aspect of the rankings is that many of the highest ranked statements deal with service elements that do not require the presence of library staff. The highest ranked statement that mentions library staff lies at 10th position, and "Library staff give accurate answers to my questions" could well reflect a concern other than the presence of staff. After that the next highest placed statement about staff comes 24th. This could mean that the empowerment of the customer has been successful and is reflected in the rankings of these statements. This justifies an argument presented by Hernon and Altman (1996) when they said that some aspects of service quality, such as information content and the organisational environment, may be more important that staffing characteristics, and that "Customers expressed a desire for self-sufficiency" (Hernon & Altman, 1998, p. 156.) This is increasingly applicable with electronic resources.

Perhaps librarians will be surprised by the bottom three statements. Customers do not regard an attractive library interior as high service quality. The statement "Library staff demonstrate cultural sensitivity" placing 99th out of 101 is also something that could surprise.

Table 21: Ranked statements from service quality survey

Statement	*Mean*	*StDev*
1. Library furniture is available (e.g. can find a seat or study desk).	6.23	1.16
2. The lighting in the building is adequate to my needs	6.18	1.22
3. The information I get from library materials is accurate	6.17	1.18
4. Equipment is in good working order: online library catalogue	6.13	1.22
5. Equipment is in good working order: photocopiers	6.13	1.31
6. Library furniture is functional	6.11	1.12
7. The range of materials held by the library meets my course needs.	6.08	1.32
8. The online catalogue is an accurate source of information about all material held by the library	6.05	1.22
9. The information displayed on the online library catalogue computers is clear and easy to follow	6.04	1.15
10. Library staff give accurate answers to my questions	6.03	1.15
11. It is easy to find out in advance when the library is open	6.02	1.22
12. The hours when the library is open match my schedule and needs	6.02	1.36
13. The toilets are clean	6.00	1.36
14. Library furniture is comfortable	5.99	1.28
15. Equipment is in good working order: computer printers	5.98	1.31
16. I find the temperature in the building is comfortable	5.98	1.21
17. Equipment is in good working order: CD-ROM and database computers	5.95	1.31
18. Accurate and helpful written instructions are available next to all equipment	5.93	1.29
19. I find the ventilation in the building is comfortable	5.92	1.35
20. I feel safe in the building	5.86	1.28
21. I find the humidity in the building is comfortable	5.86	1.28
22. Study areas in the library are kept quiet	5.86	1.50
23. The materials I want are in their proper places on the shelves	5.86	1.52
24. Library staff are available when I need them	5.85	1.24
25. The information displayed on the screen for other electronic sources (e.g. CD-ROMs) is clear and easy to follow	5.82	1.30
26. Library staff are approachable and welcoming.	5.80	1.34
27. Materials are reshelved promptly.	5.77	1.40
28. All public service desks throughout the library are served by		

knowledgeable staff.	5.77	1.22
29. When academic staff request that material be placed on three-day loan or closed reserve loan, it is done promptly.	5.76	1.40
30. Equipment is in good working order: multimedia/interactive computers.	5.76	1.40
31. The material I need from the closed reserve collection is usually available to me when I want it.	5.75	1.35
32. There are a sufficient number of toilets in the building.	5.74	1.35
33. It is easy to find where materials (books, journals, videos, maps, etc.) are located in the library.	5.73	1.41
34. Directional signs in the library are clear, understandable, and helpful.	5.73	1.30
35. Library staff are courteous and polite.	5.73	1.33
36. Using the online library catalogue I can request materials.	5.73	1.38
37. Library staff are friendly and easy to talk to.	5.72	1.39
38. The drinking fountains are clean.	5.71	1.65
39. Equipment is in good working order: audiovisual (e.g. video players and slide projectors).	5.70	1.39
40. The library purchases new materials which are related to my course needs.	5.69	1.54
41. Equipment is in good working order: microfilm and microfiche readers.	5.68	1.39
42. Using the online library catalogue I can renew materials.	5.68	1.41
43. Library staff offer suggestions on where to look for information in other parts of the library.	5.68	1.35
44. Knowledgeable staff are available to assist whenever the library is open.	5.67	1.31
45. The online library catalogue shows me materials I have borrowed.	5.67	1.44
46 .The online library catalogue has a ‘Help’ option which I can easily understand.	5.67	1.51
47. There is a sufficient number of group study rooms.	5.67	1.52
48. Equipment is in good working order: self-issue machines.	5.66	1.50
49. Library staff do not refer me unduly from on service to another for my enquiry to be answered.	5.66	1.42
50. The online library catalogue shows me materials I have requested.	5.65	1.42
51. When I enter the library I can see where I can go for help.	5.64	1.31

52. The library provides services such as staplers, hole-punchers, pencil sharpeners, and giving change.	5.61	1.60
53. Online library catalogue computers are conveniently distributed throughout the library.	5.61	1.40
54. Material I requested comes within the time frame quoted if it is currently on loan.	5.59	1.37
55. Library staff demonstrate and teach the use of electronic sources (e.g. CD-ROMs and electronic databases).	5.59	1.51
56. Staff communicate with me using terms I understand.	5.56	1.35
57. The online library catalogue displays information about material 'on order' and 'in process'.	5.48	1.37
58. The library acts promptly when I make a complaint.	5.48	1.38
59. Material I requested comes within the time frame quoted by Interloan.	5.48	1.46
60. Material I requested comes within the time frame quoted from storage.	5.45	1.46
61. When I request material, I am told how long it will take to arrive if it is currently on loan.	5.44	1.40
62. The library provides timely, accurate, and clear information about equipment which is not in working order.	5.43	1.50
63. The material I need has not been mutilated (e.g. torn pages or highlighted text).	5.39	1.39
64. When I connect remotely to the online library catalogue I do not get a busy signal or get disconnected.	5.39	1.52
65. Library staff are willing to leave the desk area to help me.	5.39	1.55
66. Instructions on remote access to the online library catalogue are easy to follow.	5.38	1.51
67. Library brochures and helpsheets are helpful.	5.37	1.48
68. Library staff offer suggestions on where to look for information outside the library.	5.36	1.54
69. There are study areas where talking is permitted.	5.34	1.83
70. It is easy to make a compliment, complaint, or suggestion about library services or conditions.	5.34	.1.47
71. I do not have to wait more than three minutes when I use the closed reserve loan collection.	5.34	1.51
72. I do not have to wait more than three minutes when I use the online library catalogue.	5.32	1.53

73. I do not have to wait more than three minutes when I ask for assistance at a reference enquiry desk.	5.29	1.53
74. Library staff help me select appropriate electronic resources.	5.29	1.50
75. Library staff understand what information I am looking for.	5.27	1.55
76. I do not have to wait more than three minutes when I use photocopiers.	5.26	1.63
77. Library staff encourage me to come back for more assistance if I need it.	5.26	1.63
78. I do not have to wait more than three minutes when I borrow material.	5.23	1.46
79. I can gain easy access to online library catalogues and other electronic resources from outside the library buildings.	5.19	1.67
80. Library staff personally help me to use electronic resources.	5.15	1.55
81. I find displays of new materials helpful.	5.12	1.64
82. I do not have to wait more than three minutes when I phone the library for assistance or information.	5.12	1.54
83. I do not have to wait more than three minutes when I use self-issue machines.	5.09	1.61
84. When I request material, I am told how long it will take to arrive from storage.	5.09	1.50
85. There are sufficient numbers of drinking fountains in the building.	5.09	1.82
86. When I request material, I am told how long it will take to arrive by Interloan.	5.09	1.48
87. Library staff mention Interloan as a means to obtain materials that the library does not have.	5.08	1.64
88. I do not have to wait more than three minutes when I use electronic resources (e.g. CD-ROMs).	4.99	1.66
89. The library material I need is in good condition (e.g. not brittle).	4.99	1.46
90. The Library's World Wide Web page contains correct and useful information about library services and materials.	4.98	1.80
91. Librarians provide teaching programmes which enable me to make more effective use of library materials and services.	4.96	1.64
92. Library staff direct me to library brochures and helpsheets.	4.91	1.62
93. I do not have to wait more than three minutes when I need to print from a computer.	4.89	1.61
94. Library staff show me how to use the online library catalogue.	4.84	1.86
95. If I recommend the purchase of new material, staff provide me		

with feedback on whether it is ordered and when it is received.	4.80	1.57
96. The library provides personal computers for me to use within the building.	4.72	2.04
97. I do not have to wait more than three minutes when I use microfilm and microfiche readers.	4.72	1.57
98. Library staff do not overwhelm me with too much information and detail.	4.62	1.72
99. Library staff demonstrate cultural sensitivity.	4.61	1.89
100. The library has an attractive interior.	4.39	1.87
101. Library staff take me to where the material is shelved instead of just pointing or telling me where to go.	3.93	1.89

10.2.4 The dimensions of service quality

The fourth objective was to see if underlying dimensions of service quality can be derived from the survey data. In this case a dimension is defined as a broad construct of a total range of service quality. "Factor analysis examines a correlation matrix and isolates the dimensions that disclose correlation patterns" (Hernon, 1994, p.199.) As this research was about testing the instrument it is not claimed that the derived factors be regarded as representative of underlying dimensions, only that the factor analysis isolated some dimensions which look, intuitively, robust and useful.

The first factor, which can be labelled *guidance*, includes several statements about the computer catalogue. Other topics, such as directional signs and library staff offering suggestions about where to look in the library, seem related. The second factor has several statements about waiting for service and can be called *waiting times.* The centrality of *electronic services* is clear in the third factor and could so be labelled. In the fourth factor there are, perhaps, two topics: *library staff* being available, courteous, approachable and friendly, plus a topic on materials being in their *correct* place. Keeping *equipment in working order* is the theme of the fifth factor. Material arriving within a *set time* lies at the centre of the sixth factor. The *building* and the library environment are the theme of the seventh factor. In the eighth, the *library furniture* and other utilities such as drinking fountains are all correlated. *Materials for course needs* is the theme of the ninth factor. Factor 10 is less clear and the last two factors are small. It can be seen that clear dimensions of service quality appear as a result of factor analysis, so the fourth objective is satisfied.

Table 22: Rotated factor pattern for service quality statements

	Value
Factor 1	
The online library catalogue shows me materials I have requested	.75850
The online library catalogue shows me materials I have borrowed	.74373
The information displayed on the online library catalogue computers is clear and easy to follow	.69545
Instructions on remote access to the online library catalogue are easy to follow	.69056
The online library catalogue displays information about material 'on order' and 'in process'	.69004
Using the online library catalogue I can request materials	.67543
The online catalogue is an accurate source of information about all material held by the library	.65503
When I connect remotely to the online library catalogue I do not get a busy signal or get disconnected	.65396
I can gain easy access to online library catalogues and other electronic resources from outside the library buildings	.63660
Using the online library catalogue I can renew materials	.58423
Directional signs in the library are clear, understandable, and helpful	.56284
Equipment is in good working order: online library catalogue computers	.54704
The online library catalogue has a 'Help' option which I can easily understand	.53494
Library staff offer suggestions on where to look for information in other parts of the library	.48891
It is easy to find out in advance when the library is open	.48786
Online library catalogue computers are conveniently distributed throughout the library	.46789
Library staff mention Interloan as a means to obtain materials that the library does not have	.43725
The library provides timely, accurate, and clear information about equipment which is not in working order	.43616
Library staff offer suggestions on where to look for information outside the library	.42320

When I enter the library I can see where I can go for help	.40110
Factor 2	
I do not have to wait more than three minutes when I borrow material	.83483
I do not have to wait more than three minutes when I use the closed reserve loan collection	.80584
I do not have to wait more than three minutes when I use self-issue machines	.79487
I do not have to wait more than three minutes when I ask for assistance at a reference enquiry desk	.78933
I do not have to wait more than three minutes when I use the online library catalogue	.73871
I do not have to wait more than three minutes when I use microfilm and microfiche readers	.72630
I do not have to wait more than three minutes when I need to print from a computer	.68950
I do not have to wait more than three minutes when I phone the library for assistance or information	.66874
I do not have to wait more than three minutes when I use electronic resources (e.g. CD-ROMs).	.64802
Staff communicate with me using terms I understand	.52622
I do not have to wait more than three minutes when I use photocopiers	.52328
Factor 3	
Library staff help me select appropriate electronic resources	.78064
Library staff personally help me to use electronic resources	.76603
Library staff show me how to use the online library catalogue	.75020
Library staff demonstrate and teach the use of electronic sources (e.g. CD-ROMs and electronic databases).	.69432
Library staff take me to where the material is shelved instead of just pointing or telling me where to go	.67260
Library staff encourage me to come back for more assistance if I need it	.63048
Library staff direct me to library brochures and helpsheets	.61244
Library staff demonstrate cultural sensitivity	.57399
Library staff understand what information I am looking for	.55661

Library staff do not overwhelm me with too much information and detail	.51637
Librarians provide teaching programmes which enable me to make more effective use of library materials and services	.51394
Factor 4	
Library staff are available when I need them	.67400
Library staff are courteous and polite	.66061
Library staff are approachable and welcoming	.63922
The materials I want are in their proper places on the shelves	.58231
Library staff give accurate answers to my questions	.54281
Materials are reshelved promptly	.52137
Library staff are friendly and easy to talk to	.51375
It is easy to find where materials (books, journals, videos, maps, etc.) are located in the library	.50394
When academic staff request that material be placed on three-day loan or closed reserve loan, it is done promptly	.49882
Library staff are willing to leave the desk area to help me	.49446
Knowledgeable staff are available to assist whenever the library is open	.48602
Equipment is in good working order: photocopiers	.44408
All public service desks throughout the library are served by knowledgeable staff	.42577
Factor 5	
Equipment is in good working order: multimedia/interactive computers	.81307
Equipment is in good working order: CD-ROM and database computers	.79516
Equipment is in good working order: audiovisual (e.g. video players and slide projectors).	.79296
Equipment is in good working order: microfilm and microfiche readers	.76833
Equipment is in good working order: computer printers	.70240
Equipment is in good working order: self-issue machines	.57021
The information displayed on the screen for other electronic sources (e.g. CD-ROMs) is clear and easy to follow	.56513
The Library's World Wide Web page contains correct and useful information about library services and materials	.53386

Factor 6	
Material I requested comes within the time frame quoted from storage	.81321
Material I requested comes within the time frame quoted by Interloan	.80375
When I request material, I am told how long it will take to arrive from storage	.75485
When I request material, I am told how long it will take to arrive by Interloan	.74442
Material I requested comes within the time frame quoted if it is currently on loan	.72913
When I request material, I am told how long it will take to arrive if it is currently on loan	.72913
If I recommend the purchase of new material, staff provide me with feedback on whether it is ordered and when it is received	.41928
	.
Factor 7	
I find the humidity in the building is comfortable	.79392
I find the temperature in the building is comfortable	.77954
I find the ventilation in the building is comfortable	.77208
The lighting in the building is adequate to my needs	.73446
Factor 8	
The drinking fountains are clean	.64551
There are sufficient numbers of drinking fountains in the building	.62074
Library furniture is available (e.g. can find a seat or study desk).	,57510
Library furniture is comfortable	.55046
There are study areas where talking is permitted	.55012
Library furniture is functional	.49516
The toilets are clean	.48343
There is a sufficient number of group study rooms	.45930
Factor 9	
The range of materials held by the library meets my course needs	.69132
The library purchases new materials which are related to my course needs	.67092
The information I get from library materials is accurate	.66013

Factor 10	
The material I need has not been mutilated (e.g. torn pages or highlighted text)	.66366
The library material I need is in good condition (e.g. not brittle)	.60398
Study areas in the library are kept quiet	.45126
The library has an attractive interior	.44865
It is easy to make a compliment, complaint, or suggestion about library services or conditions	.41979
The library acts promptly when I make a complaint	.41860
Factor 11	
The library provides personal computers for me to use within the building	.73089
The library provides services such as staplers, hole-punchers, pencil sharpeners, and giving change	.43347
Factor 12	
The material I need from the closed reserve collection is usually available to me when I want it	.41182

10. 3 Conclusion

The findings are aligned with intuitive expectations of what statements would be ranked high. That the New Zealand pilot survey supported the U.S. research quite closely validates the survey questionnaire as an effective instrument.

Librarians can review the statements in the survey and select those most appropriate to their situation. They can edit or substitute statements to suit the environment. They can use a pretest and posttest format in which customers identify their service expectations and then respond to the services actually provided by that library. Librarians might also administer a subset of the statements through focus group interviews, thereby gaining more detailed insights into the perceptions of particular constituency groups. The key point is that the set of statements if flexible and so are the methods by which the survey can be administered.

Because this research was conducted in 1996 (Calvert & Hernon, 1997) it only dealt with emerging digital technologies in a minor way and more research was needed to test if the instrument still worked when applied to electronic library services. Was the concept of service quality still applicable in a new environment in which customers hardly needed an intermediary, hence contact with library staff was minimal? Were the dimensions of library service quality still the same in an electronic environment or had they changed? To investigate these questions, more research was done in 2004, and it is described in the next chapter.

CHAPTER ELEVEN

Exploring E-Service Quality in Libraries

The research described in Chapters Nine and Ten was separated from the research described in this chapter by nearly ten years. This almost exactly coincided with the rapid change in academic libraries that resulted from the phenomenon of the Internet and all that it brought in terms of almost instantaneous access to information products such as electronic journals and Web sites. In 1995 the academic library was still primarily (though not entirely) a collection of physical materials held within four walls. To make use of the library's collection and its services, faculty and students had to visit the library in person, perhaps consult the catalogue, find copies of books, journals or audiovisual materials, and if they looked useful, either borrow them of make photocopies for later use. By 2004 a good deal had changed. Whereas in 1995 university libraries probably had access to few or no electronic journals, by 2004 many would have had access to thousands of e-journals, generally via full-text databases hosted online by aggregators. The difference to the customers was considerable, for they could probably access the catalogue from home or the office, discover which databases were the best to search, and if the desired e-book or e-journal was available, the full-text could be downloaded immediately to the computers they were using at the time. Interaction with library staff is now less necessary, and because electronic material can't be misplaced, the accuracy and timeliness of shelving is not important, nor is access to photocopiers. This, though, only applies to information that is available in electronic form. There remains a huge amount of information still only accessible through printed materials, and for that, the physical library remains crucial. This 'hybrid' library has posed some problems for library management and the staff who must maintain the services across physical and electronic environments. What constitutes service quality in the new academic library? Is it the collection, in the form of e-journals and e-books? Is it the library Web site and its links, serving as a portal? Is it virtual reference service? Is it access to the network itself? Not all library staff appear to accept that things have changed so dramatically. At the University of Texas Southwestern Medical Center at Dallas Library, "many library staff frequently viewed support of print resources as their primary responsibility and digital support as a secondary task" (Higa, Bunnett, Maina, Perkins, Ramos, Thompson, & Wayne, 2005, p.41). The research described in this chapter was an investigation of electronic service quality (e-service

quality) in academic libraries, and was quite probably the first research project on this topic to provide empirical data to support its conclusions.

11.1 Literature Review

Almost all the literature on e-service quality has emanated from the e-commerce field, not surprisingly, since that is where the interface between customers and services on the Internet first appeared. A theme in much of the literature is that the customer does not meet a service representative face-to-face, or even talk with them real-time, so whereas the personal aspects of the service encounter play a highly significant role in traditional service quality, this aspect of service is much less important in online service. Even when a customer can communicate with service staff it is likely to be via e-mail messages, so the usual visual and audio cues are absent altogether.

Research into service quality in the electronic environment is not limited to the use of disconfirmation theory, though that is the method emphasised in this chapter. Pioneering work in the field of electronic resource usage was conducted by McClure and his colleagues at Syracuse University in the 1990s (McClure & Lopata, 1996). This introductory research examined issues in collecting and using qualitative data, suggested a variety of measures, and provided sample user survey and data collection forms. It also includes assessment tools as well as information on the software products that may be considered in the assessment process. Other projects followed, though apparently without coordination. In the United States the Association of Research Libraries has used a Web-based survey to collect data on electronic usage called Measuring the Impact of Networked Electronic Services, commonly called MINES for Libraries (Franklin & Plum, 2006). This has surveyed use of a wide variety of electronic resources, not simply electronic books and journals, but also digital libraries, preprint servers and institutional repositories. Though this has become, largely through the influence of the ARL, a widespread data collection tool, it has to be questioned whether this method, focussing on usage, is really addressing the key point (in the project's name) of impact. It appears to be concentrated on measuring outputs. Another American study, again by McClure and his associates, investigated the use of e-metrics in academic libraries. They combined functionality, usability, and accessibility evaluation strategies to produce what they called "a rich and robust evaluation of digital libraries" (Bertot, Snead, Jaeger, & McClure, 2006). Functionality they defined as the extent to which the digital library is able to perform desired operations, making this

similar to measures of efficiency and process. Usability was determined by the degree to which users could intuitively use the digital library, so this is similar to effectiveness. Accessibility, they said, was the functionality available to users with disabilities.

A British study attempted to address some questions about the impact of electronic resources. The eVALUEd project published a toolkit of techniques for assessing impact, particularly whether or not students at university believed e-resources had improved their standard of their work. It produced some interesting results, such as how difficult it is for students to distinguish between resources provided by the library and other networked resources such as Google search and general email contact with teaching staff (McNicol, 2004). This serves to emphasise the real problems inherent in attempts to measure impacts and outcomes.

Wang (2003) examined Web site service quality, and provided an instrument based on a study of 260 adult respondents. The final form encompassed both the dimensions and the actual statements comprising "reliability", "responsiveness", "assurance", and "empathy". Collier and Bienstock (2003) suggest a different set of dimensions: order timeliness, order accuracy, and order condition. In this case, the influence of e-commerce can be seen clearly.

Rust and Lemon (2001) regard e-service as more than the role of service in cyberspace. This is echoed by the concept of e-service as described by Surjadjaja, Ghosh and Antony (2003) as not simply a combination of 'electronic' and 'service' but "in a true e-service operation part or all of the interaction between the service provider and the customer is conducted through the Internet" (p. 39) – though this may be overlooking new technologies such as mobile commerce. They pointed out that some aspects of e-business are actually e-service, e.g. free e-mail subscriptions and online newsletters. After a review of the literature they arrived at twenty 'determinants' of e-service operations, and then categorised them into three groups: services marketing, service design, and service delivery (p. 48). Services marketing included the determinant 'external communication'; service design included 'responsiveness', 'site effectiveness & functionality', 'up to date information', 'personalisation', 'customisation', 'navigability', 'security', 'interactivity', and 'service recovery'; while service delivery included 'real time assistance by knowledgeable CSR', 'fulfilment', and 'availability' (p.49) so it appears that the service design category is the most relevant for library e-service.

Santos (2003) called service quality "the key determinant for successful e-commerce" (p.233), and offered some clarification when she said "it is the provision of consumers with a superior experience with respect to the interactive flow of information" (p.234). She then proposed a model of e-service quality with 11 dimensions divided into what she called the 'incubative' and the 'active'. Incubative dimensions include ease of use, appearance, linkage, structure and layout, and content. Their role is to increase site hit rates, and 'stickiness'. Active dimensions consist of reliability, efficiency, communication, security, and incentives. Achieving this successfully will result in higher customer retention, and encourage positive word-of-mouth referral.

Gournaris and Dimitriadis (2003) used the SERVQUAL model and previous research on Web site evaluation to identify three quality dimensions for Web sites that proved to be stable across nations and user profiles. This research, although investigating only e-commerce Web sites, was relevant because the focus was on "100 percent information content" sites. The three dimensions their research revealed were, F1: customers care and risk reduction benefit; F2: information benefit; F3: interaction facilitation benefit. In more detail, the first dimension included aspects of service such as concern for the user, ease of communication, and security. The second dimension included the reliability, completeness and currency of the information provided. The third dimension included aspects of the site's technology – design, speed and functionality. This was one of the few cases of research suggesting that 'technology' was a separate dimension.

The methods used by Long and McMellon (2004) were similar to the original SERVQUAL process. The existing literature, especially the SERVQUAL instrument, served as a basis. Customer comments provided qualitative input. The actual data collection was based upon a series of statements, for which customers provided an expectations and a performance rating, and the analysis measured and compared the service gap, and also tried to identify underlying dimensions with a factor analysis. Initially seven categories emerged: the five original dimensions from SERVQUAL, plus two additional dimensions, the construct of 'communication' (in the original ten dimensions of Parasuruman, Zeithaml and Berry, 1985), and a second new dimension focussed on ordering and shipping, i.e. the actual purchase process, which the author suspected was a result on insecurities felt by customers when shopping on the Internet. Their *tangibility* dimension captured the "the virtual evidence of service, such as

navigation and presentation of product, and is more focussed on the Web site's ease of use" (p. 86). The *reliability* dimension included the ease of access to the web site. *Responsiveness* was largely unchanged from SERVQUAL, though it "suggests a need for more interaction between retailer and consumer" (p. 86). The *assurance* dimension covered security and privacy. The *empathy* dimension was small. The new dimension of *communication* was about the clarity of information, and the content and intent of information provision, and it included personalisation. Finally, the new dimension of *ordering/shipping/packagin*g was, as the name implies about delivery of all goods purchased, but what was expected by the customers was flexibility of options. After further analysis the *communication* dimension was dropped, and so, eventually, was *empathy*, with the suggestion that "consumers may feel that electronic commerce is less likely to have a personal component compared with a traditional service encounter" (p. 84). Thus, their dimensions differ from those that Santos (2003) advanced.

In their first study, using focus groups, Zeithaml, Parasuraman and Malhotra (2000) examined 11 dimensions of e-Service Quality: access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, assurance/trust, site aesthetics, and price knowledge. However, they cautioned that additional research might result in collapsing some of these dimensions (p. 16). Reliability, responsiveness, and assurance are all present in the five dimensions that Zeithaml, Parasuraman and Berry (1990) investigated. The dimension 'tangibles', from the original list, is similar to site aesthetics. Zeithaml, Parasuraman and Malhotra (2000) maintain that "the personal (i.e., friendly, empathetic, understanding) flavour or perceived SQ's [service quality's] empathy dimension is not required except in nonroutine situations" (p. 25). Building upon the 2000 study, Parasuraman, Zeithaml, and Malhotra (2004) developed a preliminary set of 121 statements representing all facets of e-service quality, which they later reduced to 113 items used in a questionnaire given to a random sample of Web users through an online survey. Factor analysis on the resulting data allowed them to reduce the list to 22 items on a four-dimensional E-S-QUAL scale: the four dimensions being efficiency, fulfillment, system availability, and privacy. By removing statements referring only to service recovery, they formed a three-dimensional scale (E-RecS-QUAL): responsiveness, compensation, and contact.

Finn (2004) reminds researchers that they have devoted too much attention to the reproducibility of SERVQUAL's dimensions. Other perspectives merit consideration.

Zeithaml, Parasuraman and Malhotra (2000) and Zeithaml, Parasuraman and Malhotra (2002) suggest that customers have not adequately formed their expectations in e-service quality. Collier and Bienstock (2003) interpret this as providing "support that perceptions and reasoned action should be the basis for measuring e-service quality; … the theory of reasoned action states that individual's behavior can be predicted from their intentions, which can be predicted from their attitudes about the behavior and subjective norms" (p. 158).

In summary, although exploration of e-service quality (e-SQ) in service industries "is in its early stages" (Zeithaml, Parasuraman & Malhotra, 2002, p. 371) and studies do not fully concur about the dimensions and statements explored, it is known that:

• Electronic service quality is multifaceted, not unidimensional;
• "Recovery service involves different dimensions than core dimensions and that most of the 'personal service' issues are part of recovery service rather than core service;"
• "e-SQ affects satisfaction, intent to purchase, and purchase;" and
• "Technology readiness, a customer-specific construct, is related to perceptions of e-SQ."

Zeithaml, Parasuraman and Malhotra (2002) also comment that "while some of e-SQ's dimensions are similar to those of SQ, others are entirely new or consist of new sets of attributes unique to the context of Web sites" (p. 374).

Parasurman (2000) views the positive benefits of the online environment as flexibility, convenience, efficiency, and enjoyment, and negative ones are security concerns, risk of obsolescence, impersonalisation, and lack of control. When discussing purchasing transactions, Zeithaml and Parasuraman (2004) comment that customers want efficient transactions. They also note that "the Internet raises new questions about how to understand, measure, and improve service quality: emerging research finds significant differences between the online and offline contexts." Furthermore, they say, "Not surprisingly, fulfillment emerges as a critical dimension in electronic service quality" (p xiv).

The purpose of some of the research described here is to make comparisons across discrete industries and ultimately to establish best practices for any organization in the service industry. However, as Yang, Peterson and Cai (2003) and Vavra (1997) point out, listening to one's customers should provide feedback to the planning process and continuous improvement in the services provided. Thus, it is critical to concentrate on

dimensions and corresponding statements or features that are relevant to service improvement.

The LIS literature on e-service does not display any of the depth shown in the management literature. Two approaches have developed, both adapting SERVQUAL to context-specific form, as its authors said it should be (Parasuraman, Berry, & Zeithaml, 1991). The first is a project largely centred at Texas A&M University Libraries that took the SERVQUAL instrument and converted it into LibQUAL+™ (see Heath, Kyrillidou, & Askew, 2004; Kyrillidou & Heath, 2001). LibQUAL is designed to be used as a total package, and as of 2009, more than 500 libraries in different countries have participated in LibQUAL+™. The second approach begins with "believing that SERVQUAL does not sufficiently address local expectations and priorities, Peter Hernon and his colleagues in the United States and New Zealand developed a generic set of expectations that individual libraries could use as a guide for deciding on those statements that they might treat as priorities" (Hernon & Nitecki, 2001, p. 698). Nitecki and Hernon (2000) combined the local approach to identifying service dimensions with an early version of SERVQUAL. They developed an instrument useful for local planning and diagnostic purposes. Furthermore, "central to their approach is the belief that whatever expectations are probed should result from local review and the input of library staff and some customers. Their research has focused on one library or service location and has not attempted to determine the relevancy of the statements across institutions or over time" (Hernon & Nitecki, 2001, p. 698). Neither LibQUAL or the Hernon school has previously examined the specific environment of electronic library services, though Calvert had pointed to changing responses as customer service delivered through library Web sites increased in importance (Calvert, 1998). The study reported here is consistent with the Hernon method. It has developed a pool of statements that can be adopted by any academic library wishing to assess its individual e-service quality, but the tool is designed to be flexible.

The study that follows is consistent with the conceptualisation that Hernon and his colleagues advance: SERVQUAL provides a good basis for the assessment of service quality in libraries. It can meet the specific needs of libraries in general and individual libraries, as well as address the environment of electronic services that libraries provide.

11.2 Method

From February to April, 2004, the investigators reviewed previous adaptations of SERVQUAL in the LIS literature for relevant dimensions and statements to include in an e-SERVQUAL instrument. Next, they conducted four hour-long focus group interviews with 25 library staff at four of the eight universities in New Zealand, primarily with those librarians managing electronic services. The protocol was that each group reviewed the emerging instrument developed by the investigators, suggested new statements, commented on the wording of each statement, and reflected on the adequacy of the range of dimensions addressed. Upon completion of the process, two university library directors in the United States commented on the statements and dimensions; they suggested additional changes in wording.

Following this, the investigators picked a self-selected sample of library customers and asked them to identify their expectations for library e-services. Their comments were then compared to those on the instrument; no changes were necessary.

From May through September, with permission of the acting university librarian, proxies approached students throughout the library at Victoria University of Wellington and invited their participation. To limit bias, data collection was spread over different times, days and weeks, and different locations in the library. Data collection was based on a convenience nonprobability sample. The investigators realised that the inclusion of 104 statements in section A of the questionnaire (see Figure 4) makes data collection labour intensive, with the likely result that some students or faculty might opt out of participation in the study and that others might not complete the whole questionnaire. However, given the exploratory nature of this research, the limited knowledge of e-service quality in libraries, and the purpose of the study being the development of a data collection instrument, there was no alternative. It was important to evaluate how the survey process went and to begin the process of reducing the number of statements and dimensions. For data analysis, the data were entered into both Excel and SPSS 12.00 for Windows.

11.2.1 Reliability and validity

Given the focus on instrument development, the investigators did not pursue external validity or the generalisability of the findings to the customer or broader university community. Nor did they limit the study to those statements having local relevance. Rather, they developed an instrument consistent with ones discussed in the literature

review (e.g., Nitecki & Hernon, 2000; Wang, 2003). The ongoing review of the instrument—its statements and dimensions—by the New Zealand librarians and customers, and the summary review by two U.S. library directors, focused on utility, reliability, and internal validity.

11.3 Results

A total of 206 library customers participated. The majority were students, although some faculty also responded. The students were, for the most part, active library users, mostly claiming to use the library daily or at least several times per week. There was no noticeable over- or under- representation of any part of the student body; graduate and undergraduate students were represented, as were all subject disciplines of the university.

11.3.1 The service quality statements

On a ten-point scale ranging from 1 (of *no importance*) to 10 (of *highest importance*), the statements with the highest mean scores for *expectations* (the extent to which an ideal library might honour the intent of the statement) were:

- The library provides an adequate number of computer workstations in good working order (mean 9.25);
- The library Web site allows me to find out about library hours, locations, services, and policies (mean 9.22);
- The library provides access to a wide range of electronic resources in my subject area, in particular online databases (mean 9.16);
- The library Web site is easy to navigate (mean 9.15);
- The online catalogue is easy to search (mean 9.12);
- When I use the university's computer network, I can log on easily/quickly (mean 9.12); and
- When I use the university's computer network, I can log off easily/quickly (mean 9.11).

The mean rating for all but five of the remaining statements covering *expectations* was between 9.06 and 7.19. The five exceptions were:

1. The library provides laptop computers available for loan (mean 6.54);
2. The library provides online information services that offer real time audio/video so that I can interact with someone (mean 6.53);

3. The library Web site contains services for which I do not mind providing personal information (mean 6.46);
4. The library communicates with me effectively through Internet chat (mean 6.18); and
5. The library communicates with me effectively through text messaging (mean 5.96).

On the other hand, the mean response for the statements asking the extent to which the particular library has the feature described by the statement ranged from 8.46 to 2.51. The following eight statements had a mean of less than 4.49:

1. "The library provides electronic document delivery services for materials that the library does not subscribe to" (4.15);
2. "The library alerts me about newly published material based on a personalised user profile the staff helps me create" (3.78);
3. "The library provides computers with wireless networking" (mean 3.71);
4. "The library provides online information services that offer real time audio/video so that I can interact with someone" (3.57);
5. "The online catalogue allows me to pay fines" (mean 3.36);
6. "The library provides laptop computers available for loan" (mean 2.88);
7. "The library communicates with me effectively through Internet chat" (mean 2.87); and
8. "The library communicates with me effectively through text messaging" (2.51).

In only one instance did the service performance of the library exceed customer expectations. The statement, "The library provides computers with campus e-mail," produced a gap of -0.77.[2]

11.3.2 Quadrant analysis

Quadrant analysis is a graphic correlation technique that produces data easy to visualise (Hernon & Altman, 1998, pp. 198-202; Lynch, Carver, & Virgo, 1996; Vavra, 1997, pp. 311-315). The technique plots data about service attributes into four quadrants defined by two dimensions: one reflects the importance to service excellence that customers give

[2] The gaps were measured *E* (expectations) – *P* (perceptions).

service attributes, while the other indicates the extent to which customers think a particular service has the attributes. The first dimension is plotted along the horizontal axis as the ideal expectation for excellent service quality, and the second dimension is plotted along the vertical axis as perceived library performance.

Attributes falling into quadrant one are very important to customers, who perceive the library as possessing them or as performing well in their delivery. The library should retain these attributes in a reconfiguration and delivery of its services. Attributes falling into quadrant two are also important to the respondents, but they are not perceived as prominent features of a library service. Within a library culture that strives to respond to customer expectations, these service features merit improvement. Any attributes present in quadrant three are relatively unimportant for achieving excellence, although respondents associated those attributes with library service. Management might refocus the service so that its image matches the attributes shown in quadrant one; alternatively, library staff might want to revisit the resources allocated to providing the service attributes in quadrant three and review the relative expense of providing a less valued activity. Quadrant four does not include attributes that customers either value or perceive the library as doing well. Those attributes might be ignored and resources reallocated toward delivery of attributes more important for excellent service.

Table 23 gives the results taken from the quadrant chart and places each statement within one of the four quadrants. Those statements falling into the first quadrant are important to the respondents, and they perceive the library as possessing them or as performing well in their delivery. The second quadrant included all of the statements for questions (see Figure 4):

- 9: “For the electronic desktop delivery services mention in the previous question, the library …;” and
- 10: “The library ….”

as well as the statement:

- 8: “The library provides electronic document delivery (full text to customer’s desktop) services for material that the library does not subscribe to …”).

These and the other statements contained in this quadrant are important to the respondents, but they do not perceive them as prominent features of library service. The labels for each quadrant (e.g. ‘Retain’) are taken from Nitecki and Hernon (2000).

Table 23: Results of quadrant analysis*

Quadrant One: Retain

The library Web site (question 1):

- Allows me to find out about library hours, locations, services, and policies
- Arranges library databases by general subject/discipline
- Arranges links to Web sites by general subject disciplines
- Enables me to download material:
    - Onto the computer screen quickly
    - And print a copy with ease
- Enables me to have access to:
    - Download material onto removable media (e.g., USB memory device or floppy disk)
    - Online guides to information about my subject interests
- Has links that function (no dead links or re-directed links that do not work)
- Includes online request forms (e.g., for reference/interlibrary loan)
- Is easy to navigate
- Is easy to return to after using other Web sites/online resources
- Is well structured with:
    - Consistent headings and labels on every page
    - Links that provide access to relevant information, allowing the serendipitous discovery of sources
    - Menus that help me understand how information/content is organized
- Uses colours, backgrounds, fonts, icons, images, text size, and layout that are easy to view

The online catalogue (question 2):

- Allows me to:
    - Check the status of items I borrow and find out about overdue notices, any holds on items I borrow, renew material, place a hold on material, and view fines

    - Save my search results to a disk/USB memory devices/my e-mail/or bibliographic software (e.g., Endnote)
- Displays information that is clear and easy to understand
- Explains how to place a hold on items found while searching
- Has links that:
    - Function (no dead links or re-directed links that do not work)
    - Provide access to relevant information
- Indicates the number of copies available
- Is a comprehensive source of information about all materials in the library's electronic collections
- Is easily accessible from outside the library building
- Is easy to navigate
- Keeps an accurate record of:
    - Any monies I owe
    - My library transactions
- Provides the option of a *simple* or *advanced* search
- Provides Web links to all e-resources identified in the online catalogue

The library provides (question 3):

- Access to laptop ports
- Computer printing
    - At a reasonable cost
    - From equipment in good working order
- Computer workstations (e.g., for access to the Web, electronic texts, and journals)
- Computers dedicated only for online catalogue use
- Computers with:
    - Access for USB memory devices
    - All the software I need to access curriculum material
    - Campus e-mail
    - Productivity processing software (e.g., word process, spreadsheets)
    - Web e-mail

When I use the university's computer network, I can (question 4):

- Log on easily/quickly
- Log off easily/quickly
- Log on whenever I want from any off-campus location

Course materials available from the library are (question 5):

- Accessible through:
    - Campus-based course management software (e.g., Blackboard)
    - The online catalogue/library Web site
- Easy to find on the library's online catalogue
- Easy to download
    - To paper copy
    - And save as a file
- Easy to read/view once downloaded

The library provides access to a wide range of electronic resources in my subject area, in particular (question 6):

- Full-text e-journals
- Online databases

The library provides online information services that (question 11):

- Are easy to locate on the library's Web site
- Have staff who provide expert assistance when I need it
- Interact with me in a:
    - Courteous manner
    - Respectful manner (e.g., maintaining privacy)

Quadrant Two: Improve

The library Web site (question 1):

- Allows me to:
    - Find out about forthcoming library tutorials and programs (e.g., library instruction classes, online guides to my course interests)
    - Have access to online library tutorials
    - Search several databases simultaneously
- Enables me to determine which electronic resources are most relevant to my course needs/research interests
- Informs me about regular updating of content/resources
- Informs and assists me in personalizing the use of online databases
- Is kept current by regular updating of content
- Is well structured with:

    - An option to search the library Web site
    - The presence of a site map

The online catalogue (question 2):

- Allows me to:
    - Save my search strategies (queries) and use them again
- Can be trusted with my personal information
- Has easy-to-follow instructions
- Provides access to e-reserves (course material available electronically)

The library provides (question 3):

- An adequate number of computer workstations in good working order
- Technical help and support

When I use the university's computer network, I can (question 4):

- Pay online for Internet/printing/library charges

The library provides access to a wide range of electronic resources in my subject area, in particular (questions 6):

- E-books
- Online indexes
- Other electronic files (e.g., music files and art slides)

The library communicates with me effectively through (question 7):

- E-mail

The library provides electronic document delivery (full text to customer's desktop) services for material that the library does not subscribe to (question 8)

For the electronic desktop delivery services mentioned in the previous question, the library (question 9):

- Advises me how long to expect to wait for the item to be received
- Enables me to
    - Ascertain online the progress of fulfilling my request
    - Make a fully electronic request (i.e., search a database and download bibliographic information to a library request form)
- Has no hidden printing costs for the service

The library (question 10):

- Alerts me about newly published material based on a personalized under profile the staff help me create
- Gives me personalized support if I have problems in using library resources

The library provides online information services that (question 11):

- Acknowledge my question within 24 hours
- Answer my question within five days
- Are easy to contact at any time by:
    - E-mail
    - Online inquiry form
- Give me pointers and paths to useful resources that will enable me to help myself better in the future

Quadrant Three: Revisit

The online catalogue (question 2):

- Provides Web links that are distinguishable from other information on the screen

Quadrant Four: Reallocate Resources

The library Web site (question 1):

- Allows me to:
    - Find names and contact details of key library staff
- Contains services for which I do not mind providing personal information
- Enables me to have access to
    - Online library tutorials
- Is well structured with
    - A navigation means (e.g., breadcrumbs)
- Uses colours, background, fonts, icons, images, text size, and layout that are
    - Attractive

The online catalogue (question 2):

- Allows me to pay fines

The library provides (question 3):

- Computer workstations (e.g., for access to the Web, electronic texts, and journals)
- Computers with
    - CD and/or DVD burning
    - Document/photo scanning
    - Wireless networking

- Laptop computers available for loan

The library communicates with me effectively through (question 7):

- Internet chat
- The online catalogue
- Text messaging

The library provides online information services that (question 11):

- Enable me to interact with library staff 24/7/365
- Encourage me to provide feedback on my satisfaction with the service received
- Offer real time audio/video so that I can interact with someone
- Provide a statement on the scope and the procedure for asking questions

___

*The question number in the parenthesis refers to the correct placement of the statement in Figure 4.

The one statement in the third quadrant is relatively unimportant to the respondents. The final quadrant includes statements that neither respondents valued nor the library performs well. These features might not require the level of attention and resources the library currently gives them.

11.4 Factor Analysis

Factor analysis comprises another way to examine the data covered in Section A of the instrument (see Figure 4). SPSS was used; the extraction method was principal component analysis, using Varimax rotation with Kaiser normalisation. Five variables with low communalities were removed from the analysis. Eleven factors produced a robust solution, with the rotation converging after 15 iterations. Table 24, which represents the rotated component matrix, identifies the 11 factors.[3]

Table 24: Service quality factor analysis

A. First factor

Statement	
The library provides access to a wide range of electronic resources in my subject area, in particular online databases	.828

[3] Santos (2003) suggested 11 e-service dimensions, as did Zeithaml, Parasuraman, and Malhotra (2000).

The library provides access to a wide range of electronic resources in my subject area, in particular online indexes	.809
The library provides access to a wide range of electronic resources in my subject area, in particular full text e-journals	.720
The library Web site informs and assists me in personalizing the use of online databases	.681
The library Web site is easy to navigate	.667
The library provides access to a wide range of electronic resources in my subject area, in particular other electronic files (e.g., music files)	.660
The library Web site is kept current by regular updating of content	.601
When I use the university's computer network, I can log on easily/quickly	.598
When I use the university's computer network, I can log off easily/quickly	.548
The library provides online information services that give me pointers and paths to useful resources that will enable me to help myself better in the future	.533
The library provides access to a wide range of electronic resources in my subject area, in particular e-books	.492
The library provides electronic document delivery services for material that the library does not subscribe to	.406

B. Second factor

Statement	
The library provides online information services that interact with me in a courteous manner	.843
The library provides online information services that interact with me in a respectful manner (e.g. maintaining privacy)	.834
The library provides online information services that are easy to contact at any time by e-mail	.784
The library provides online information services that are easy to locate on the library's Web site	.653
The library provides online information services that acknowledge my question within 24 hours	.639
The library provides online information services that have staff who provide expert assistance when I need it	.632
The online catalogue displays information that is clear and easy to understand	.572
For electronic document delivery services, the library has no hidden printing costs	.566
The library provides online information services that are easy to contact at any time by online enquiry form	.560
Course materials available from the library are easy to read/view once downloaded	.558

Course materials available from the library are easy to download to paper copy	.529
Course materials available from the library are easy to download and save as a file	.485
The library Web site utilises colours, backgrounds, fonts, icons, images, text size, and layout that are easy to view	.479

C. Third factor

Statement	
The library Web site enables me to download material onto computer screen quickly	.841
The online catalogue has links that function	.742
The online catalogue has links that provide access to relevant information	.741
The online catalogue is a comprehensive source of information about all materials in the library's electronic collections	.738
The library Web site enables me to determine which electronic resources are most relevant to my course needs/research interests	.640
The library Web site enables me to download material and print a copy with ease	.593
The online catalogue is easy to search	.560
The library provides technical help and support	.549
The library provides an adequate number of computer workstations in good order	.535
The online catalogue explains how to place a hold on items found while searching	.531
The online catalogue has easy-to-follow instructions	.505
The library Web site has links that function	.503
The library Web site enables me to have access to online guides to information about my subject interests	.461

D. Fourth factor

Statement	
The library provides computer printing from equipment in good working order	.862
The library provides computers with productivity processing software	.829
The library provides computer workstations (e.g. for access to the Web)	.826
The library provides computer printing at a reasonable cost	.817
The library provides computers with campus e-mail	.795
The library provides computers with document/photo scanning	.780
When I use the university's computer network, I can pay online for internet/printing/library charges	.744

The library provides computers with Web e-mail	.723
The library provides computers with all the software I need to access curriculum material	.718
The library provides computers with CD and/or DVD burning	.571
The library Web site is easy to return to the library Web site after using other Web sites/online resources	.565
The online catalogue keeps an accurate record of any monies I owe	.524

E. Fifth factor

Statement	
The online catalogue allows me to save my search results to a disk/my e-mail/or bibliographic software	.711
The library Web site enables me to download material onto removable media	.694
For electronic document delivery services, the library enables me to make a fully electronic request	.659
The library provides computers with access for USB memory devices	.613
The library Web site allows me to search several databases simultaneously	.605
For electronic document delivery services, the library enables me to ascertain online the progress of fulfilling my request	.603
The online catalogue keeps an accurate record of my library transactions	.586
The library Web site is well structured with the presence of a site map	.576
The library provides computer workstations for group work	.553
The library provides online information services that provide a statement on the scope and the procedure for asking questions	.543
The online catalogue can be trusted with my personal information	.523
The library Web site allows me to find out about library hours, locations, services, and policies	.483
The online catalogue is easily available from outside the library building	.465

F. Sixth factor

Statement	
The library communicates with me effectively through internet chat	.783
The library communicates with me effectively through text messaging	.746
The library provides online information services that offer real time audio/video so that I can interact with someone	.709
The library provides computers with wireless networking	.494
The library provides online information services that encourage me to provide	.461

feedback on my satisfaction with the service received	
The library provides online information services that enable me to interact with library staff 24/7/365	.451
Course materials available from the library are accessible through the online catalogue/library Web site	.446
The library provides laptop computers available for loan	.442

G. Seventh factor

Statement	
The library Web site is well structured with a navigation means (e.g., breadcrumbs)	.724
The library provides online information services that answer my question within five days	.719
The library Web site allows me to find names and contact details of key library staff	.671
The library Web site is well structured with links that provide access to relevant information, allowing the serendipitous discovery of sources	.620
The library Web site is well structured with an option to search the library Web site	.616
The library Web site is well structured with menus that help me understand how information/content is organised	.607
The library Web site is well structured with consistent headings and labels on every page	.397

H. Eighth factor

Statement	
For electronic document delivery services, the library advises me how long to expect to wait for the item to be received	.655
The library provides access to laptop ports	.572
The library provides computers dedicated only for online catalogue use	.561
The library Web site informs me about regular updating of content/resources	.517
The library Web site allows me to find out about forthcoming library tutorials and programs	.493
The online catalogue allows me to pay fines	.481
The library Web site arranges library databases by general subject/discipline	.410

I. Ninth factor

Statement	
The library Web site has online request forms	.746

The online catalogue allows me to check the status of items I borrow and find out about overdue notices, and holds on items I borrow	.677
The online catalogue provides access to e-reserves	.608
The online catalogue allows me to save my search strategies and use them again	.464
Course materials available from the library are accessible through campus-based course management software	.452

J. Tenth factor

Statement	
The online catalogue provides Web links to all e-resources identified in the online catalogue	.729
The library communicates with me effectively through the online catalogue	.613
When I use the university's computer network, I can pay online for internet/printing/library charges	-.548
Course materials available from the library are accessible through the online catalogue/library Web site	.526

K. Eleventh factor

Statement	
The library alerts me about newly published material based on a personalised user profile the staff help me create	.622
The library gives me personalised support if I have problems in using library resources	.589
The library Web site contains services for which I do not mind providing personal information	.587
The library Web site enables me to have access to online library tutorials	.423

11.5 Dimensions of E-Service Quality in Libraries

From the related literature and the focus group interviews, the investigators deduced ten dimensions related to the electronic services:

1. Ease of use (navigation, search, find, download, speed, remote access);
2. Web site aesthetics (colours, graphics, size, etc.);
3. Linkage (connectivity to relevant information, avoid broken links, regularly update the accuracy of links, etc.);
4. Collections (quality, relevance, and deep collections of electronic material to meet my immediate needs);

5. Reliability (frequency of updating, proper technical functioning of Web site or electronic product, etc.);
6. Support (help pages, section on frequently asked questions, technical help if there is a problem or question, etc.);
7. Security/privacy/trust (belief the site is relatively safe from intrusion, personal information is protected, etc.);
8. Ease of access (logon/off quickly, etc.);
9. Flexibility (different search procedures: basic and advanced, etc.); and
10. Customisation/personalisation (receive e-mail announcements about the arrival of new books on topics of personal interest, etc.).

Respondents were asked to identify the importance of each as they evaluate a library's quality of service (see section B of the survey instrument in Figure 4). They scored the importance from 0 to 100 so that the total came to 100. There were 164 responses to this part of the study. The investigators added the actual scores given to each feature; if one respondent gave scores of 50-0-0-0-0-50-0-0-0-0, the investigators counted 50 for the first and sixth features on the list and 0 for all the others. They calculated the sum and mean of all scores for each feature. They then determined the ranking of each feature by mean scores. Table 25 provides the total score, mean, and rank for respondents to each dimension. It is interesting to note that security/privacy/trust rated fifth and Web site aesthetics last. When asked to identify any additional dimensions, no respondents did.

Table 25: Ten dimensions of e-service quality*

Dimension	Total score	Mean	Rank
Ease of use	2849	17.37	1
Collections	2238	13.65	2
Reliability	2155	13.14	3
Easy of access	1596	9.75	4
Security/privacy/trust	1532	9.34	5
Linkage	1445	8.81	6
Support	1316	8.02	7
Flexibility	1205	7.35	8
Customisation/personalisation	1146	6.99	9
Web site aesthetics	918	5.60	10

* Figure 4 defines each dimension.

Two other questions asked the respondents to identify the *most important* and *least important* dimensions (see Table 26). Ease of use, collections, and reliability scored highly in the most important list whereas Web site aesthetics ranked last. The lists were almost inverted for the least important but there are a few variations. The customisation/ personalisation dimension was rated least important by 24.4% of the respondents yet 6.2% rated it as most important, suggesting a split in attitudes.

Table 26: Ranking of the most and least important dimensions*

	Most Important N = 177			Least Important N= 172		
Dimension	Number	Mean	Rank	Number	Mean	Rank
Ease of use	63	35.59	1	2	1.16	9**
Collections	38	21.47	2	4	2.33	7
Reliability	35	19.77	3	3	1.74	8
Customization/personalization	11	6.21	4	42	24.42	2
Security/privacy/trust	10	5.65	5	15	8.72	3
Support	7	3.95	6	5	2.91	6
Easy of access	5	2.82	7	2	1.16	9**
Linkage	4	2.26	8**	9	5.23	4
Flexibility	4	2.26	8**	7	4.07	5
Web site aesthetics	0	0.00	10	83	48.26	1

* Figure 4 defines each dimension.

**A tie in the ranking.

11.6 Discussion

Despite the length of the questionnaire, respondents did not indiscriminately mark the same number for each statement. Rather, they appeared to have read and considered each statement before answering it. Although the number of completions per statements ranged from 135 to 191, random conversations with some of the respondents indicated that they were merely following the instruction: "If you have 'no opinion', … please skip the statement."

11.6.1 Dimensions and quality factors

Traditionally, SERVQUAL measured perceptions and expectations on five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman, Berry, & Zeithaml, 1988). As Thompson, Cook, and Heath (2001, p.130) point out, "Knowing the number of dimensions that users employ in evaluating library services is important, because it is critical to use scoring dimensions that correspond to users' perceptions rather than librarians' preconceptions." Thus, dimensions can be recast and collapsed. The goal is to do the same for e-service quality in libraries and in other service industries.

Examining the responses to the ten dimensions related to e-services shows that, while quite a few give little consideration to a customisation/ personalisation dimension, enough people think it is sufficiently important to remain on a list of dimensions. Security/privacy/trust placed fifth as the most important dimension, but third as the least important dimension. Clearly, these two dimensions appear important to some customers, and this could be a symptom of evolving attitudes.

Turning to the statements (Section A of Figure 4 and the factor analysis), once the respondents provided their answers to the individual statements, through induction, the investigators tried to identify groupings of statements (*quality factors*) and to compare those factors to the dimensions specified in Section B. In an area such as e-service where so little is known, the use of induction is appropriate because it uses empirical evidence to arrive at theory.

The investigators performed factor analysis on the *expectations* data. As already mentioned, the solution for the 11 factors displayed in Table 24 was stronger than for 10 factors. The first grouping of quality factors to emerge is *collections*, thus confirming the investigator's decision to use this as one of the dimensions in section B. This grouping includes two key statements about *ease of access* and elements of *reliability*. Presumably, customers want easy access so that they can locate and retrieve material in electronic collections, and they want reliable access to, and provision of, those materials. They want access to a database when they need or perceive a need for it.

The second grouping reveals a clear pattern, although in this case it may be more contentious. The statements strongly suggest *empathy*, which is similar in many ways to

responsiveness as suggested by Zeithaml, Parasuraman, and Malhotra (2000). Oddly, they did not feel that e-service quality justified the inclusion of an empathy dimension because most e-commerce does not involve direct contact with the provider's staff. Customers only need assistance when things go wrong, or in highly complex situations. Most customers presumably prefer to use a library that includes its resources in an online catalogue and that adequately signposts its layout so that they need not request assistance. However, they might expect assistance if they cannot find what they want or if they encounter a service obstruction (e.g., a reference tool difficult to use). They also want smooth access to e-journals and will only ask for assistance when they cannot use a database interface or encounter some other obstacle. This grouping has some similarities to a *support* dimension (also proposed by Santos, 2003). The *empathy* dimension is similar to c*ourtesy* proposed by Yang, Peterson, and Cai (2003). The grouping suggested by the quality factor is *linkage*, which was also suggested by Santos (2003), who said that "the important factor is not only to set up the proper links and avoid broken links, but also to maintain those links frequently" (p. 240).

Many other investigations of e-service quality have focused exclusively on service provided through Web sites. Libraries do more than this, and the fourth grouping proposed is that of *equipment*, that is, the provision of equipment for library customers to use, most often when in the physical surrounds of the library building. Online payment of library charges is associated in the customer's mind with equipment provision.

The fifth grouping is *flexibility*, which involves choice of ways to pay, ship, buy, search for, and return items. Although many of these choices come from e-commerce (see Zeithaml, Parasuraman, & Malhotra, 2000), the statements in the fifth quality factor represent an equivalent for a library service; the ability to save searches to different media, make requests in different formats, and search the Web site through a site map.

The sixth grouping contains several statements about customer interaction with the library, whether this is personal or automatic messaging. It includes the encouragement of customer feedback on service provision. It has similarities with the *interaction* dimension suggested by Loiacono, Watson, and Goodhue (2002), and with *communication* suggested by Yang, Peterson, and Cai (2003), Long and McMellon (2004), and Santos (2003). Keating, Rugimbana, and Quazi (2003) claim the area of personal interaction lays on the

border between service quality and relationship quality, which they see as different constructs.

The seventh grouping matches the dimension of *ease of use* suggested by the investigators and Santos (2003), and *ease of navigation* suggested by Zeithaml, Parasuraman, and Malhotra (2000). Not all the statements, however, can be translated into quality factors. No pattern to the statements in the eighth and tenth quality factors is discernible. The ninth grouping, though rather weak, looks like the *efficiency* dimension suggested by Zeithaml, Parasuraman, and Malhotra (2000), and Santos (2003). The *linkage*, *flexibility*, and *efficiency* dimensions lie in the *perceived convenience* higher-level abstraction proposed by Zeithaml, Parasuraman, and Malhotra (2000).

Finally, the eleventh grouping is the *customisation/personalisation* dimension proposed by Zeithaml, Parasuraman, and Malhotra (2000). A minority of respondents viewed this quality factor as an important feature of e-service. Zeithaml, Parasuraman, and Malhotra (2000) found that many customers associated anonymity with efficiency and preferred to remain anonymous, and that they regard attempts by the organisation to get to know them as intrusive. Nevertheless, a minority of respondents considers personalisation as a significant aspect of e-service quality (p. 25). Other aspects of e-service, such as trust/assurance, and price knowledge, seem to be irrelevant to library customers.

11.6.2 The instrument

Libraries wanting to use the instrument should select no more than 22 statements to probe from the pool of 104 statements (grouped into 11 headings) investigated here; the number 22 corresponds to the number used in the original SERVQUAL and in E-S-QUAL developed by Zeithaml and Parasuraman (2004). Whichever statements they select—perhaps from those contained in quadrant one (Table 21)—might be important to service provision. These 22 statements, however, need not be confined to statements taken from this study; the staff should review the list provided here, rewriting and adapting from the pool for local application.

11.7 Electronic and Non-electronic Service Quality

Studies using SERVQUAL to explore service quality in libraries have tended to focus on five dimensions:

1. Assurance (knowledge and courtesy of employees and their ability to inspire trust and confidence);
2. Empathy (the caring, individualized attention that a firm provides its customers);
3. Reliability (ability to perform the promised service dependably and accurately);
4. Responsiveness (willingness to help customers and provide prompt service); and
5. Tangibles (the appearance of physical facilities, equipment, personnel, and communication material).

The researchers asked respondents to identify the most and least important dimension. Except for one instance (a study of reference services), they considered *reliability* as the single most important service. With the exception of Nitecki and Hernon (2000, pp. 265-266), the dimension of *tangibles* was the least important. Given that the current study probed a digital environment and explored different dimensions, an exact comparison is impossible. Reliability ranked third as most important and eight as least important. Ease of use, a new category, rated as the most important, and Web site aesthetics was the least important dimension.

11.8 Further Research

Given the importance of the digital environment to library collections and services, researchers ought to continue the modest beginning reported in this chapter. They should refine the pool of statements, while still acknowledging that no list can be comprehensive for all time. Some of the statements in quadrant four of the quadrant charts (e.g., the low value placed on finding names and contact details of library staff, access to online library tutorials, paying fines through the library catalogue, the provision of computers with wireless networking, and communication through the online catalogue) are surprising and merit further exploration.

Researchers should examine the various dimensions seeking their reduction in number and re-conceptualisation. Based on a comparison of the factor analysis groupings with the dimensions proposed in Section B of the instrument, there are some definite similarities as well as differences. Perhaps *ease of use* and *ease of access* might be combined. Furthermore, *Web site aesthetics*, *efficiency*, and *equipment* might be a subset of ease of use and access. Reliability did not merge as a separate grouping, but given its importance in a non-digital environment, that dimension merits continued review. The dimension for

support might be recast to include *empathy*. *Interaction* merits examination as a separate dimension.

As Berry (1995, p. 264) observed, "Service quality is integral to delivering value to customers," and it can be explored by assorted methods of data collection, not all which involve self-reports based on surveys and focus group interviews. Quadrant one (see Table 23), for instance, includes "The library Web site (question 1):

- Allows me to find out about library hours, locations, services, and policies;
- Arranges library databases by general subject/discipline; and
- Arranges links to Web sites by general subject disciplines.

Each of these features could be quickly verified from a quick search of a library's home page, counting the number of clicks needed to answer the statement. In addition, the library might engage in usability testing in which staff members observe students navigating the Web site. Staff members might also ask students to comment on their search during and after the session—a type of verbal protocol. It seems appropriate that LIS researchers continue to explore self-reporting but not confine data collection to any one method—be it SERVQUAL, LibQUAL+™, or WebQual. Libraries have other forms of service assessment at their disposal, such as an analysis of customer (e-service) complaints received and mystery shopping done online or in-person, to provide a snapshot of e-service.

11.9 Conclusion

According to Berry (1999, p. 98), "continuously improving the execution of activities that compose the service depends on knowing what to improve. Active listening to the customers who use the service and the employees who perform it informs … [meaningful] improvement." "Active listening," he explains, "encompasses ongoing, systematic data gathering from both service providers and users to detect patterns of change in their expectations and perceptions" (p. 98). Furthermore, "it incorporates the use of multiple listening methods to tap the strengths of each and compensate for weaknesses" (p. 98).

Library e-SERVQUAL is one means for creating active listening—between customers and library staff. Staff might continue such listening through internal discussions and follow-up focus group interviews with those customers who either responded or did not participate. E-service quality presents both challenges and opportunities, as does the design of

measurements of such service quality. It is necessary for librarians to understand service quality delivered in a digital environment in order to manage and maintain a tradition of continuous quality improvement. As Nitecki and Hernon (2000) conclude,

> A culture of service quality assessment provides opportunities to demonstrate to customers how what the staff learns about customers' expectations and perceptions helps to shape the service that libraries provide and the commitments that librarians make to their customers. Such opportunities should not be ignored. (p. 269)

Figure 4: E-service quality: library collections and services*

Section A

Ideal Library	**Library XXX**
Directions: Based on your experiences as a user of library services, please think about the ideal kind of library that would deliver excellent quality of service. Please indicate the extent to which you think such a library should possess the feature described by each of the statements listed below. If you feel a feature is of "*no importance*" for excellent libraries, circle the number "*1*" for "*strongly disagree*." If you feel a feature is of "*highest importance*" for excellent libraries, circle the number "*10*" for "*strongly agree*." If your feelings are less strong, circle one of the numbers in the middle. If you have "*no opinion*," however, please skip the statement.	*Directions*: The same set of statements relate to your feeling about the services offered by Library XXX. For each statement, please show the extent to which you believe the Library has the feature described by the statement. Circling a "*1*" means that you "*strongly disagree*" that the Library has that feature. Circling a "*10*" means that you "*strongly agree*" that the Library has that feature. If you have "*no opinion*," however, please skip the statement.

There are no right or wrong answers. All we are interested in is a number that truly conveys your feelings regarding excellent quality of service in libraries. Your individual response will be kept confidential but will help us to understand your expectations for online library services.

	IN IDEAL LIBRARY SD SA ↓ ↓	IN LIBRARY XXX SD SA ↓ ↓
1. The Library Web site [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
2. The online catalogue [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
3. The library provides [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
4. When I use the university's computer network, I can [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
5. Course materials available from the library are [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
6. The library provides access to a wide range of electronic resources in my subject area, in particular [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
7. The library communicates with me effectively through [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10

8. The library provides electronic document delivery (full text to customer's desktop) services for material that the library does not subscribe to [insert statements	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
9. For the electronic desktop delivery services mentioned in the previous question, the library [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
10. The library [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
11. The library provides online information services that [insert statements]	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10

12. Are there any other expectations that you cons1der important when using library electronic resources and services. Yes___ No___. If "yes," please insert the expectation in the chart below and check a number in both columns.

	IN IDEAL LIBRAY	**IN LIBRAY XXX**
	SD **SA**	**SD** **SA**
	↓ ↓	↓ ↓
a.	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
b.	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
c.	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10

Section B

Directions: Listed below are ten features pertaining to libraries and the electronic services they offer. We would like to know how important each

of these features is to you when you evaluate a library's quality of service. Please allocate a total of 100 points among the ten features according to how important each feature is to you. The more important a feature is to you, the more points you should allocate to it. Please be sure that the points you allocate to these features add up to 100.

13. Ease of use (navigation, search, find, download, speed, remote access) ____points

14. Web site aesthetics (colours, graphics, size, etc.) ____points

15. Linkage (connectivity to relevant information, avoid broken links, regularly update the accuracy of links, etc.) ____points

16. Collections (quality, relevance, and deep collections of electronic material to meet my immediate needs) ____points

17. Reliability (frequency of updating, proper technical functioning of Web site or electronic product, etc.) ____points

18. Support (help pages, section on frequently asked questions, technical help if there is a problem or question, etc.) ____points

19. Security/privacy/trust (belief the site is relatively safe from intrusion, personal information is protected, etc.) ____points

20. Ease of access (logon/off quickly, etc.) ____points

21. Flexibility (different search procedures: basic and advanced, etc.) ____points

22. Customisation/personalisation (receive e-mail announcements about the arrival of new books on topics of personal interest, etc.) ____points

TOTAL POINTS ALLOCATED <u>100</u> points

23. Which one feature among items 13-22 is *most important* to you?
(Circle your choice)

Ease of use	Support
Aesthetics	Security/privacy/trust
Linkage	Ease of access
Collections	Flexibility
Reliability	Customisation/personalisation

24. Which one feature among items 13-22 is *least important* to you?
(Circle your choice)

Ease of use	Support
Aesthetics	Security/privacy/trust
Linkage	Ease of access
Collections	Flexibility
Reliability	Customisation/personalisation

25. Is there anything else not included in the features of items 13-22 that you find important in evaluating the quality of service you receive?

a. ___Yes (Please specify): _____
b. ___No

Section C

Directions: Please answer three more questions for us.

26. Please estimate how many times you have used Library XXX computers or online services during this school term:

a. ____Daily
b. ____Several times a week
c. ____Once a week
d. ___Less than once a week
e. ___Other (please specify):

27. What best describes you?

a. ____Undergraduate student
b. ____Graduate student
c. ____Faculty
d. ____Staff
e. ____Other (specify):

28. What general category best describes your discipline?

a. ____ Arts & humanities
b. ____ Behavioural sciences
c. ____ Business (commerce)
d. ____ Engineering
e. ____ Law
f. ____ Medical sciences
g. ____ Physical sciences
h. ____ Social sciences
i. ____ Undecided
j. ____ Other (specify):

Thank you very much for participating in this study

*Table 21 contains the statements for insertion into Section A.

CHAPTER TWELVE

Conclusion

This meta-evaluation of library evaluation has examined two type of library evaluation in great detail, supported by research based on empirical data. The starting point was that knowing these two methods could not be the only ways and not necessarily the best ways to assess the goodness of a library, the author sought to evaluate the evaluations with the intention of determining if there was a superior method. It became apparent that both methods have strengths and weaknesses, and the same applied to other forms of library evaluation that had not been included in the author's research. That led to the Research Question asked in this thesis "What are the most useful types of library evaluation, and how are they related to each other?"

A literature research revealed numerous variations of library evaluation methods. After integrating several variants of the same kind of evaluation into a parsimonious number of categories, just five different approaches to evaluation were left. In Chapter Two the five different approaches to library evaluation were described and their merits analysed. Here, in some detail, the answer to the first part of the Research Question was found - the most useful types of library evaluation. What was made clear in this stage of the research was how different evaluation methods were suited to different needs within libraries. The efficiency approach is useful as a continuous source of management data needed to monitor internal processes. It has quite a few limitations, fully described in section 2.2, that lead to a conclusion that this approach on its own is limited in its benefits and should be used in combination with at least one other form of evaluation. The same could be said of the other forms of evaluation. They have their uses but each one on its own could lead to tunnel vision and is therefore best used in combination with least one other method. This was one finding of the research.

First, the collection of input, output and process measures, the most traditional method of library evaluation, was discussed. It was concluded that these measures were, in most cases, simple to use and in some instances are collected automatically by library computer systems. They can be used to assess the efficiency of the library system by measuring its ability to gather resources and convert them into outputs. Tracking the data over time

facilitates an analysis of longer-term trends in library efficiency (Matthews, 2004, p. 102). Yet these measures say nothing of the quality of the library's customer service, or if it is meeting stakeholder expectations.

Second, Chapter Two introduced the use of the Multiple Constituencies method for analysing stakeholder expectations that was further explained in the research described in Chapters Three to Eight. Taking Lynch's statement that effectiveness is "something which does well that which it is supposed to do" (1983), it was observed that the problem lay in knowing what the library was supposed to be doing. Then, using the theories of organisational effectiveness of Cameron (1978, 1981, 1986), the Multiple Constituencies approach pointed to library effectiveness being the sum of the expectations of all the library's stakeholder groups. This adds an external view of the library system's operations to the purely internal view given by input, output and process measures. It also ties in very well with methods such as management by objectives in which meeting planned objectives is a measure of success. If the effectiveness research described here is used in the development of organisational objectives, it gives the library much stronger justifications for why it is setting those objectives.

Third, a view of the use of the library could be added to other assessments (such as output measures) by evaluating the service quality provided by the library. The research described in Chapters Eight to Eleven was based upon the SERVQUAL model of Parasuraman, Zeithaml and Berry (1985, 1988), and later amended for the electronic environment by Parasuraman, Zeithaml and Malhotra (2004). This used disconfirmation theory, otherwise known as gap analysis, as a means to assess an organisation's service quality. The method of asking customers to state their expectations of service and then their perceptions of actual performance was central to the Hernon-Altman method of assessing library service quality (Hernon & Altman, 1996; Hernon, Nitecki, & Altman, 1999) that is used in the research in this thesis. By asking the customers directly what they think of the library's service it provides a corrective to the internal views of effectiveness described elsewhere. As service organisations it is essential that libraries know what customers think of their service, but alone this form of evaluation misses some of the aspects of library goodness best assessed by other forms of evaluation. Service quality, for example, says nothing of the library's efficiency converting inputs into outputs. It does not assess the views of other stakeholders such as funding agencies. That is why it is best used alongside other forms of evaluation.

Fourth, Chapter Two includes an attempt to define the concept of value when applied to libraries. The conclusion is that there are at least two different ways to define value, one is a short-term economic value assessed by an individual, and the other is a long-term measure of value that generally is made by a community. Though the use of cost-benefit analysis holds much appeal for funding agencies because the method produces very specific figures of library value in economic terms (Missingham, 2005, p. 150) there is the constant problem of getting respondents to give true statements about what they would pay for a service, throwing doubt on the utility of this method. The longer-term assessment of library value almost returns to the pre-evaluation period when library goodness was almost taken for granted. Value does, though, give an internal view of the use of the library that shows how outputs are valued by customers, and some approximation of the economic value placed on customer service quality.

Using the Open Systems Model, a four cell matrix was developed for this thesis. The two axes were chosen based upon what was revealed by examination of systems theory applied to library evaluation. The *y* axis (vertical) uses two perspectives: an internal view (from the library) and an external view (the customers). The *x* axis (horizontal) is about the topic: the library itself; its collection, processes, costs, and the customer's use of its products and services. Four types of library evaluation were described in detail in Chapter Two, and each one placed in a cell of the matrix. This provides the answer to the second part of the Research Question that asked about the relationship between different types of library evaluation.

		TOPIC	
		Library system	*Use*
PERSPECTIVE	Internal	Resource use Procedures	Cost-benefit Contribution to social capital
	External	Setting objectives Stakeholder expectations	Service quality Reducing complaints

Two other evaluation methods were included in Chapter Two. The use of a balanced scorecard was included to show how different types of measures could be brought together

to provide a single view of the organisation. This would be an appropriate form of evaluation for a mature organisation. Finally, the use of outcomes was included as a measure of value, though the conclusion drawn was that there are as yet no truly accurate measures of library outcomes.

12.1 Further Research

Inevitably all research has finite limits. There is always more research that can and should be done, so here are some suggestions for further research in library evaluation.

Library evaluation frequently requires gathering data from library staff, customers, and other stakeholders. This is often done using questionnaires, yet this method can be unsatisfactory because of low response rates. Instruments for evaluation could be developed that use the Web as a medium to see if response rates improve (Nitecki & Hernon, 2000).

The effectiveness research described in Chapters Three to Seven gathered data from all stakeholder groups, but the dimensions were derived from data collected only from library staff. This research could be done again asking other stakeholder groups similar questions to see if the dimensions were much the same or considerably different.

Libraries serve society and so they can never be static organisations that do not change. As the environment is changing, so must libraries. This means that library evaluation methods must keep pace with the rate of change. The initial service quality survey instrument developed in 1996 (Hernon & Calvert, 1996) needed updating before it could be used to assess service quality of a library's electronic services (Hernon & Calvert, 2005). The process needs to continue.

Other evaluation methods such as the Business Excellence approach embodied in the EQA favoured by the European Foundation for Quality Management (EFQM, 2009) could be used in parallel with methods highlighted in this thesis. This is especially relevant as business excellence is used in New Zealand by organisations including the Hutt City Council and its libraries.

Evaluation needs to reflect changes in organisational structures. It is increasingly common for libraries to work with partners in a networked structure (Castells, 2001), and to join with other libraries in consortia. Measures developed so far focus on a single organisation, and as yet there is no measurement available for consortia.

Libraries often serve large communities, but there are market segments with the larger community that need special attention. Most library evaluation methods look at the whole library and all its customers. Evaluation methods could focus on specific groups that might need resources and services out of the mainstream. These groups could include people with impairments (e.g. Hernon & Calvert, 2006), people of different ethnic groups, and people with specific information needs such as politicians and scientists.

Service quality is what the customer says it is. The definition of 'customer' is always likely to vary according to the observer and the context. In higher education, for example, are students 'customers' of their lecturers and tutors? Most library evaluation into service quality has used variations of gap analysis (Chapters Eight to Eleven) but this is not the only means of gathering customer expectations and opinions about the service. Mystery shopping has been used in a few libraries to provide a photograph in time of the organisation as the customer sees it (Calvert, 2005) and this method could be developed. Another variation of service quality assessment is the use of complaints.

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