Review of satisfaction research and measurement approaches

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CONTENTS

Abstract

This report summarises the international literature on visitor satisfaction and its measurement. Despite its importance, satisfaction measurement is not commonly practised by organisations. Measurement is frequently misunderstood, being concerned mainly with quantitative aspects. Other important means of measurement include: the information that the organisation gives to its customers; information that past customers give to future customers; and information that critics write about the organisation. Visitor satisfaction is multi-dimensional, ephemeral, and not easily measured. However, its role is enhanced immensely when measurement becomes an essential component of an integrated management programme. Following a brief review of established customer satisfaction measurement methodologies, a newly developed method is introduced. The study concludes with an extensive list of techniques to help the service provider hear the voice of the customer.

1. Introduction

The acknowledgement and enhancement of a symbiotic relationship between the management of protected natural areas and tourism (Budowski 1976; Boo 1991a, 1991b) becomes more vital as tourism continues its global growth (Statistics New Zealand 1999). New Zealand is advantaged by its clean, green image and its pristine wilderness areas, given that these values are the principal elements in world tourism's fastest-growing sector: ecotourism (Higham 1998). The nation is slowly coming to accept that tourism is not just a 'fun' business but also has serious implications for the well-being of its economy, culture, people, and the conservation estate.

The challenge is to minimise the negative and enhance the positive impacts on host populations and the natural environment, thereby meeting and exceeding the needs and wants of visitors and residents (Butler 1999). The overall objective is to ensure the sustainability of local tourism activity as well as the natural context that makes it possible. All these sentiments are widely described in the tourism literature (Lawson & Baud-Bovy 1977; McKercher 1993a, 1993b; Lindberg et al. 1997). The difficulty lies in operationalising these sentiments.

A critical component of the sustainable visitor management process is obtaining information that management can use to take action to ensure that visitor expectations are continually met or exceeded. Identifying the different ways in which we are able to listen to 'the voice of the customer' (Berry & Parasuraman 1997), and then translating what we heard into action in order to better meet and exceed the needs, wants, and expectations of customers (visitors), is the long-term purpose of this report. Visitor satisfaction measurement can only be of much use if it is the engine that drives an integrated management system for continuous improvement, that in turn results in sustainable visitation and environmental protection.

This report provides a state-of-knowledge review of visitor satisfaction concepts and applications of satisfaction assessment methodologies to aid the Department of Conservation (DOC) in visitor management in protected natural areas. The overall goal is to provide a baseline resource contributing to the development of a comprehensive satisfaction monitoring methodology. To achieve this goal, this report has four primary objectives:

- To define what constitutes visitor satisfaction according to different levels of management information need.
- To describe the basic features of visitor satisfaction and the common measures used in satisfaction assessments.
- To describe limitations of visitor satisfaction evaluations and the common pitfalls experienced.
- To describe recommendations for different satisfaction assessment approaches for the different levels of management information needs.

Following this introduction, the report consists of three main sections. The first provides a background to customer satisfaction research and measurement in general, including consideration of satisfaction in all service industries as well as tourism. The next section more specifically reviews visitor satisfaction in tourism and in protected natural areas, with greater emphasis on New Zealand examples. The report concludes with a summary of the main points, conclusions and recommendations. Appendices provide terminology definitions (Appendix 1) and a more detailed discussion of both a widespread (Appendix 2) and a recommended (Appendix 3) satisfaction measurement technique.

2. Background to customer satisfaction measurement

2.1 IMPORTANCE OF MEASURING SATISFACTION

Customer satisfaction measurement is not new. In medieval Europe and before the industrial revolution, quality was the essence of craft industry. Everyone in the village knew everyone else: the manufacturer was the neighbour, the fellow churchgoer, and friend of the customer. This close relationship meant that the manufacturer understood what the customer wanted and needed (Evans & Lindsay 1999). The industrial revolution led to the demise of the craftsman and the proliferation of monopolies in which the customer had no choice but to buy what was available. The close customer-manufacturer relationship, which emphasised process and relationships to ensure customer satisfaction in the craft industry, was substituted with a product-oriented system. Detection and checking at the end became the norm, instead of prevention and process management (Dale et al. 1994).

Measurement is a necessary prerequisite of quality control' (Morrison 1994, p. 47). The formal use of measurements can be traced back several thousand years. The pyramids of Egypt, the invention of printing, and the uniformity of armour show that measurement and control have existed throughout human history (Everett & McAlevey 1995). 'It is interesting to note that most of the basic principles of modern quality control—measurement, precision, standards, inspection, feedback, inter-changeability, legal and military requirements—are of relatively ancient origin. Running through all the historical examples is the common thread of customer satisfaction, whether the customers were the inhabitants of Babylon, the weavers of medieval clothing, Venetian sailors, American soldiers, or the mill-owners of the industrial revolution. This still remains the most important principle of all' (Morrison 1994). Measurement provides the glue to customer satisfaction.

It was Deming (1986, 1994), building on the work of Shewhart & Dodge, who assisted the Japanese in their economic resurgence that brought notice to the rest of the world of the importance of customer satisfaction through quality. It is well known now how the quality movement has encompassed the whole world. We should not ignore the lessons of the past; as the Red Queen said to Alice, 'it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast' (Carrol 1952). We need to measure how fast we run in order to know how fast we run.

Product planning and product quality have long ago become an integral part of the manufacturing process. The needs, wants, and expectations of the customer are met because a process is in place that ensured the outcome of 'zero defects' (Crosby 1979), that was fit for its purpose (Juran 1974) through the use of statistical process control (Deming 1986). The growth of the service sector gave rise to the importance of 'managing service quality, … understanding what is service quality, and what its determinants are and how they may be measured' (Lewis 1994). Researchers in the past ignored the problems of service quality in the service sector (Haywood-Farmer 1988). Today the service sector makes up three-fourths of total employment in most of the developed world (Fitzsimmons & Fitzsimmons 1998).

The critical issue was how to measure service quality. Emphasis was placed on the differences between service industries and manufacturing industries, and between services and products (goods). The service characteristics of intangibility, heterogeneity, labour intensity, time-perishability, simultaneous production and consumption, and customer participation in the service process have become familiar citations in the service literature. Latu & Everett (1998) have presented strong arguments that those characteristics can also apply to products (goods).

'The real quality revolution is just now coming to services. In recent years, despite their good intentions, few service company executives have been able to follow through on their commitment to satisfy customers. But service companies are beginning to understand what their manufacturing counterparts learned in the 1980s—that quality doesn't improve unless you measure it' (Reichheld & Sasser 1990).

2.2 CUSTOMER SATISFACTION RESEARCH

Satisfaction research in general has proliferated mainly in the disciplines of management and marketing. It is surprising that the majority of businesses, especially small businesses (80%), do not utilise any form of customer satisfaction measurement at all, citing cost and the complexity of the exercise as the reasons for not doing so. Ignorance seems also to be a contributing factor, because simply listening to and acting upon customers' comments is commonly regarded as an acceptable form of measurement.

Increasing competition and economic globalisation suggest that customer satisfaction research, though very much in its infancy, will continue to ascend in importance in the affairs of any organisation. The ways of researching customer satisfaction are many and diverse. A basic way of assessing customer satisfaction is simply 'listening to the customer all down the line' through 'focus groups'. Another is to train staff to encourage and listen to customer feedback. Successful companies have extra staff for the purpose of listening to the customer: 'There in front of them, is the customer service desk, manned on a continuous basis ready, prepared and willing to hear whatever the store's customers have to say. The clerks at the checkout counters are also trained, ready and willing to take notes on what the customer says. … Listen carefully and open your eyes' (Horowitz & Jurgens-Panak 1992, p. 423).

A prevalent method of measuring service quality consists of simply comparing the expectations of service with the perceptions of actual service received. 'There are aggregation problems with the simple comparisons of mean levels of expectation and performance, while techniques such as factor analysis and regression may be too complex to be fully operational' (Ennew et al. 1993, p. 59).

Customer satisfaction measurement is an indispensable aspect of any organisation because it identifies where supply has not matched demand. It has existed throughout history in some form and is part and parcel of any continuous improvement programme. A combination of the major groupings ranging from the general level of qualitative and quantitative distinctions, to specific techniques such as in-depth interviewing, focus groups, telephone surveys, and mail surveys, tends to produce a more accurate multi-faceted depiction of a highly complex real situation.

TABLE 1. DISTINCTIONS BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCH APPROACHES. ADAPTED FROM DUTKA 1995.

	QUALITATIVE	QUANTITATIVE
Type of Research	Exploratory	Descriptive/statistical
Type of Question	Open-ended (probing)	Closed (fixed options)
Number of respondents	Few	Many
Analysis	Subjective	Statistical
Interviewer qualifications	Special skills required	Less need for special skills
Generalisation of results	Very limited	Reasonable

2.3 QUANTITATIVE AND QUALITATIVE RESEARCH APPROACHES

Differences between these two major categories of customer research are outlined in Table 1. Qualitative research obtains in-depth information from a few cases through in-depth interviews and focus groups. Words and observations are the vehicles used to obtain qualitative data. Quantitative research obtains information by using numbers to represent descriptive classifications and direct measurements of attitudes, opinions, behaviours and individual characteristics. In market research this is done most typically through telephone and/or mail questionnaires.

The two methodologies are complementary, each having its individual strengths and weaknesses. When they are combined, their strengths are maximised. Initial qualitative research is helpful in the development of quantitative questionnaires. Following up on quantitative questionnaires with qualitative research will assist in tidying up loose ends, including exploring uncertainties and new questions arising from the quantitative responses and analyses. It is also possible to combine quantitative and qualitative methodologies in a questionnaire where open-ended questions are asked with sufficient writing space for comments. However, traditional practitioner fields such as marketing and management have tended towards the quantitative approach. 'Much tourism scholarship, working within such a cross-disciplinary context, reflects this bias in favour of rigorous, quantitative, and scientific methods' (Walle 1997, p. 524).

2.4 SOME PROMINENT QUANTITATIVE METHODOLOGIES

There are several questionnaire-based quantitative methodologies commonly used for measuring customer satisfaction. These include SERVPERF ('Service Performance'), SERVQUAL ('Service Quality'), IPA ('Importance-Performance Analysis') and HOLSAT ('Holiday Satisfaction'). In addition, this report introduces another methodology derived from these: EPI ('Expectations-Perceptions-Importance').

SERVPERF is the most common approach. However, it is relatively simplistic, measuring perceptions alone. When measuring perceptions only, the researcher assumes that what the visitor thinks they received or experienced is the level of satisfaction with the service, product and/or experience. Researchers have also referred to the measurement of perception as the measurement of performance.

The SERVQUAL methodology measures visitor satisfaction by identifying the discrepancy between expectation and perception, but it is limited by the set dimensions and the strict questionnaire format. SERVQUAL purports to measure service only (refer Appendix 2).

The IPA methodology was introduced by Martilla & James (1977). It aims to measure the relationship between perception and importance. It differs from

SERVQUAL by measuring importance rather than expectation. Others who have used this approach include Mengak et al. (1986) and Ennew et al. (1993).

The HOLSAT methodology was introduced by Tribe and Snaith (1998), specifically as a measurement instrument proposed for measuring holiday satisfaction. HOLSAT is a replication of SERVQUAL, measuring satisfaction using expectation/performance analysis.

EPI (refer Appendix 3) is a new methodology constructed by synthesising and extending all these approaches.

Table 2 compares the potentials of the fundamental measurement formulae that underlie the logic underpinning each of the leading approaches.

There are 5 basic measurement formulae that in various combinations characterise the range of evaluative measures represented by these different methodologies.

1. Perceptions (P) alone can be used for predictive and comparison purposes, and are often used as the sole indicator of attainment of an attribute. It is the basis for the SERVPERF methodology. However, perception scores on their own can be a source of complacency in a company that is a high performer, receiving continuously high perception ratings. A high performance organisation should anticipate high *expectations* because of its reputation. A perception rating of 6 is high, but against an expectation rating of 7, the company has failed to meet the customer's expectations. The better the company performs, the higher customer expectations become. Customer expectations increase with promotion and competition.
2. The Performance-Evaluation gap (P–E) is the discrepancy between the perception score and the expectation. This is the traditional measure of service quality, and is used as the basis for the widespread SERVQUAL methodology. However, it is an incomplete measure as it lacks consideration of the importance of the attribute to the customer. For example, two items with identical gaps of 3 could not be differentiated using the traditional approach even if customers deemed one irrelevant and the other critical.
3. The Performance Rating (P×I) is obtained by the multiplication of the perception and the importance scores. This is the basis of the IPA methodology. It provides a true indicator of performance from the perspective of the cus-

TABLE 2. COMPARISONS OF POTENTIAL FROM DIFFERENT SATISFACTION MEASUREMENT FORMULAE. SOURCE: LATU & EVERETT (1999).

	Potential Measures				
Formula	One	Two	Three	Four	Five
SERVPERF	P				
IPA	P	P × I			
SERVQUAL	P	P − E *			
EPI	P	P − E *	P × I	E × I	(P − E) × I *

* (P − E) assumes positive quality ratings values when a scale with 1 = low is used; otherwise, (E − P) may be employed, with the quality rating = (E − P) x (n + 1 − I) where n is the scale maximum.

tomer, and may be ranked for direct comparison. However, without considering the customer's expectations, it remains incomplete as a measure of customer satisfaction.

4. The Anticipation Rating (E×I) is acquired by the multiplication of the expectation and importance scores. The expectation score on its own gives an indication of customer expectations, which is useful in indicating the level of expectations—but not in determining whether, and to what degree, the particular attributes are of importance to the customer. The combination of E and I provides this measure of anticipation, which like performance, may be ranked.
5. The Satisfaction (or Quality) Rating ((P–E)×I) is the discrepancy between what the customer expected and what he/she perceives was actually received, multiplied by how important that particular attribute was to the customer. The end result of this formula is to provide a ranked rating of the attributes, thereby prioritising areas for improvement. This requires full application of the EPI methodology. Overall, all possible types of measurement permutation result from applying the EPI methodology. Sample calculations to illustrate the utility of each of the five measures described above are portrayed in Appendix 2, which discusses how SERVQUAL in particular has been adapted to form the EPI approach.

2.5 SUMMARY

Customer satisfaction measurement is indispensable to organisational sustainability, yet the majority of organisations do not actively seek such measures and act upon the resulting implications. Recognising that satisfaction is a multi-dimensional concept suggests that the corresponding measurement tool should be all-encompassing. However, past approaches have been fragmentary as the field is very much in its infancy as a research area. Instituting measurement as an integral component of an organisation's culture is just the beginning of the ongoing process of continuous and discontinuous improvement. There exist a multitude of ways (qualitative and quantitative) to measure customer satisfaction. The best results are obtained when a combination of the most relevant methods is used.

3. Visitor satisfaction research

3.1 VISITOR SATISFACTION MEASUREMENT APPROACHES IN GENERAL

Although customer satisfaction research has grown in the last decade to become the fastest-growing area in services marketing and management (over 17,000 recorded papers), very little of this research has been done in the tourism industry (Danaher & Arweiler 1998; Teye & Leclerc 1998; Lawton et al. 1998). Cronin & Taylor (1992) pointed out the need for comparative customer satisfaction studies in tourism, not only because of the multifaceted nature of the industry but also because of the cultural diversity of the people who are tourists.

Kearsley (1997a) highlighted the lack of monitoring processes in New Zealand, when discussing sustainable tourism development. Less than 5% (Dymond 1996) of local authorities, tourism's hope for an integrated source of visitor satisfaction information, measure visitor satisfaction, and the data collected are at best rudimentary (Hall & McArthur 1996). The quantitative approach to collecting data has been the one more popularly used in recreation research (Simmons & Berno 1995).

Tourism research in areas that have direct effects on visitor satisfaction has been ongoing and growing. They include motivation (Dann 1977; Iso Ahola 1987; Mannel & Iso-Ahola 1987; Cohen 1988; Mannel 1989; Gnoth 1997), social impacts (Lawson et al. 1996), wilderness perceptions (Shultis & Kearsley 1988; Kearsley 1990, 1997b; Shultis 1991; Kliskey 1992; Higham 1996), and carrying capacity (Shelby 1980; Graefe et al. 1984; Shelby et al. 1989). Motivation studies lead to an understanding of visitors' needs, wants, and expectations. Social impact studies measure the levels of positive/negative effects on the host population, while carrying capacity studies include the visitor, the host and the environment. Wilderness perception studies are a part of carrying capacity studies. In the last few years several studies have aimed at specifically measuring visitor satisfaction.

Bramwell (1998) introduced the 'place marketing' formula in a tourism satisfaction study in Sheffield. 'Place marketing' emphasises the importance of matching end user satisfaction with product development, considered a no-fail mechanism. Success is greatly enhanced with the proper alignment of product with the end user. 'Product development is a prerequisite for satisfying tourists' changing demands and ensuring the long-term profitability of the industry. Ideally, tourism products that meet marketplace demands, are produced cost-efficiently, and are based on the wise use of the cultural and natural resources of the destination' (Smith 1994, p.582). Ongoing product development is driven by survey results and satisfaction levels with a range of tourism products and by different user groups. A place provides a multitude of products and services for diverse interest groups. 'Place marketing' also recognises the importance of residents' attitudes. Newly developed products will affect positively or negatively the local community (Joppe 1996, Haywood 1997). Potential visitors' opinions are sought to identify potential future visitors and deficiencies in the marketing approach.

Laws (1998) introduced the service blueprinting method of managing visitor satisfaction in heritage settings in a Leeds castle. This method recognises that a Leeds castle visit is made up of a series of events and experiences, which influence satisfaction. 'A service blueprint records and maps the events and processes which the customer experiences. … In essence, a service blueprint is a diagram which shows all the elements that go to make the service being studied: its purpose is to enable the service to be analysed as objectively as possible' (Laws 1998, p. 547).

Mayer et al. (1998) developed a model for measuring gaming satisfaction in a casino, based on four constructs: Experiential Affect/Atmosphere, Chance of Winning, Customer Service and Process. The Gaming Satisfaction Model (GSM) was the first gaming satisfaction model formulated. It assumed that ' … overall customer satisfaction is a more accurate measurement of a company's prior, present, and future performance than are incident-specific satisfaction measures' (p. 178). The GSM model is adapted from the American Customer Satisfaction Index (ACSI) and Booms & Bitner's (1981) marketing mix (product, price, promotion, place, physical evidence, participants, and process of assembly) for services.

Carr (1998) studied the motivations and experiences of mountaineering guides in New Zealand's Southern Alps, using both quantitative and qualitative approaches, also previously used by Simmons & Berno (1995) and Johnston (1986). While accepting the usefulness of the qualitative approach as an in-depth way to obtain insights into why tourists do certain things, it was found that the qualitative approach was time-consuming and intrusive. The qualitative aspect was achieved through the use of open-ended questions and interviewing where it was appropriate and non-intrusive. Musa (1998) in a study of divers' geographical aspect of satisfaction at Sipadan found a 97.8% level of satisfaction with the overall experience yet 90% complained about overcrowding.

3.2 VISITOR SATISFACTION RESEARCH IN PROTECTED NATURAL AREAS

Like other satisfaction research areas, visitor satisfaction research in protected natural areas is minimal and fragmented. Visitor satisfaction measurement and research are integral parts of planning and sustainable management. Kearsley (1997a) points out that 'it is clear that the efforts that are being made, regionally and nationally, towards market promotion need to be matched by efforts to manage the impacts of promotional success' (p. 88). Ad hoc management approaches predominate in the industry and Mathieson & Wall (1982) observed that impact analysis was being undertaken often 'after the horse has bolted' so to speak.

Planning and sustainable management are the prerequisites of visitor satisfaction (Johnson 1967; Shelby 1980; Shelby et al. 1989; Wheeler 1991, 1993; Urry 1992; Gauthier 1993; Hunter 1995; Orams 1995, 1997; Clarke 1997).

TABLE 3. WILDERNESS PERCEPTIONS CLASSIFICATION. ADAPTED FROM HIGHAM (1997).

PERCEPTION LEVEL	PURISM CLASS
One	Non-purist
Two	Neutralist
Three	Moderate purist
Four	Purist

Research at Otago University, led by Professor Kearsley, into visitor satisfaction to natural areas, identified that wilderness means different things to different people. The researchers recommend a supply side management model that divides protected natural areas into different degrees of wilderness, and then matches visitors' varying perceptions of wilderness (demand) to them (Table 3).

Wilson (1979) differentiated a wilderness purist who did not tolerate the presence of other people and artefacts, from others that accepted huts, tracks and bridges as consistent with their expected wilderness experience. This concept has been further developed by Shultis & Kearsley 1988, Kearsley 1990, 1997a,b, Shultis 1991, Kliskey 1992, and Higham 1996. Visitors to protected natural areas were asked 'to state the extent to which they accepted various facilities (huts, tracks and bridges), characteristics (remoteness and solitude) or developments (exotic forests and mining) in wilderness areas' (Kearsley 1997c, p.15). The responses to these questions were used to match different groups of people against different varying wilderness environments, thereby meeting customer requirements (Kliskey & Kearsley 1993). Similar studies using perceptions of crowding to measure social carrying capacities are replications based on ongoing research in North America (e.g. Shelby et al. 1989).

Higham (1997) recommends that more information should be made available to visitors about the availability of different wilderness experiences (degrees) in New Zealand that match Kliskey's classification (Table 4). Customer satisfaction will be more likely to be achieved when visitors choose the experience that most likely matches their individual wilderness expectation. Higham reiterates that such information should also include 'levels of recreation use, levels of facilities provided, and level of challenge' (p. 85). Cessford (1994) in a survey of 559 canoeists on the Whanganui River, found that canoeists favoured information-based management approaches to regulatory controls.

The World Tourism Organization (WTO) sets standards to ensure customer satisfaction through Sustainable Tourism Development (Table 4), considered by tourist experts as the panacea; it ensures satisfaction of all stakeholders, and most notably the visitor, with the well being of the environment safeguarded.

Management systems for the protection (ecocentric) and enjoyment by visitors (anthropocentric) of the natural environment include Ultimate Environmental Thresholds (UET), Recreation Opportunity Spectrum (ROS), Limits of Acceptable Change (LAC), Visitor Impact Management (VIM), Visitor

TABLE 4. INDICATORS OF SUSTAINABLE TOURISM. ADAPTED FROM KEARSLEY (1997B).

Allocation of categories of site protection throughout the area of jurisdiction
Indication of the levels of stress from tourists within key sites
Indication of the intensity of use within key sites
Degree of social impact
Degree of control of development
Degree of waste management at key sites
Independent review of planning process
Indication of the stability of critical ecosystems
Consumer satisfaction
Local satisfaction
Proportional contribution of tourism to the local economy

Experience and Resource Protection (VERP), and Management Process for Visitor Activities (VAMP). Extensive SWOT analyses and discussions of these strategies are made in Cole & McCool (1997). While these programmes have an ecocentric orientation, the anthropocentric ingredient is just as critical; 'the objective of ecosystem management often is not to restrict anthropogenic change but to direct it' (Brunson 1997, p. 44).

3.3 THE MULTI-DIMENSIONALITY OF VISITOR SATISFACTION TO NATURAL AREAS

Visitor satisfaction to natural areas is a multi-dimensional concept (Hendee 1972; Decker et al. 1980; Vaske et al. 1986; Herrick & McDonald 1992). The multiple-satisfaction approach to game management is recommended to all management of wildlife and recreational or aesthetic resources. In the case of gaming, for example, satisfaction may be considered met with 'game bagged'. Management's objectives therefore were considered achieved by simply increasing the game population. The increasing popularity of hunting and decreasing game moved management to rethink and identify ways of keeping hunters happy. Similar to the growing pressure that all outdoor managers face, the problem is alleviated when identifying that the reasons for seeking outdoor recreation are diverse and complex (Table 5).

Hendee (1972) defines satisfaction in relation to quality. Quality is the 'congruence between expectations and reality of a recreationist's experience, satisfactions being separate components or dimensions of the experience' (p. 106). Hendee's model (Table 5) deduces that hunting is more than just killing. Decker et al. (1980), on the other hand, in a study of hunting in Arnot Forest, New York, accepted the multidimensionality of satisfaction, but concluded that hunting's main purpose was to bag an animal, and that satisfaction was more likely to be achieved if the likelihood of success was high.

Stankey et al. (1973) confirmed the obvious relationship between hunting success and satisfaction. An in-depth analysis of the significance of the success ratio by examining what constitutes quality hunting and how quality variations

TABLE 5. MULTIPLE-RECREATION RESOURCE MANAGEMENT. ADAPTED FROM HENDEE (1972).

GENERAL MODEL	GENERAL EXAMPLE	SPECIFIC EXAMPLES
Resource	Outdoor recreational resources	Game and fish
Means of utilisation (how the resource is tapped to gain a product)	Recreational activities and experiences	Hunting and fishing
Product (what is derived from the resource)	Multiple satisfactions	Exercise, displaying skill, companionship, success etc.
Goals (ultimate objectives of management)	Human benefits	Physical benefits (such as health) Psychological benefits (such as self-esteem) Personal benefits (such as relationships) Economic benefits (such as food)

affect hunters' satisfactions, found that 'success is only one outcome to which hunters aspire' (p. 240). Satisfactions can be derived from just as much aesthetic enjoyment, solitude, sociability, challenge, and other aspects of the experience. Dimensions that lead to hunter satisfaction are often complex, some of which are regarded as more important than hunting success. These include finding their preferred form of hunting, intensity and diversity. Depending on hunters and the type of hunting, other dimensions such as nature and escapism are also of value (Potter et al. 1973). Herrick & McDonald (1992) recommend that researchers examine the various 'mechanisms' (p. 243), as visitor satisfaction multi-dimensional approaches have dealt mainly with behavioural-type variables such as crowding and impacts. 'However, few studies have examined setting variables for a river recreation experience (e.g. water quality, water flow, length of rapids, etc.') (p. 243).

Vaske et al. (1986), in a study of waterfowl hunting, found that hunting success was not the all-important determinant of satisfaction but expectation of hunting success. Expectations determine satisfaction. Recreationists' expectations are formed by their previous experience, by education and through information received. One way of solving the problem of decreasing availability of game and the increasing number of hunters is to educate hunters of the other joys of the hunting experience.

Social carrying capacity has also been widely used as a way of measuring visitor satisfaction. The assumption 'that satisfaction decreases as visitor levels increase' (Beaumont 1997, p. 168) has been generally accepted as a limited approach to measuring satisfaction, which depends on a multitude of variables and attributes, even in a wilderness area where solitude is the most sought-after attribute (Shelby & Heberlein 1986). Other factors that can affect satisfaction include 'scenic beauty, the presence of wildlife, the congeniality of companions, the challenge of the experience, the weather, and the condition of the environment' (Beaumont 1997, p. 169).

Dorfman (1979), using a case study in camping, proposes a measurement strategy to identify the relationship between recreational satisfaction and the individual differences in people. It presupposes that there are aspects that contribute to overall satisfaction. While identifying the absence of negative conditions such as inconsiderate campers, crowding etc. as contributing to overall satisfaction, the weather was identified as the single most important attribute that affects satisfaction or dissatisfaction. Noe (1987), in a study of leisure satisfaction measurement, identified three groups of satisfaction models, namely motive, discrepancy and hedonistic. The 'motive' model 'measures satisfaction by identifying whether basic needs, motives, and experiences of individuals are fulfilled by a leisure activity' (p. 165). Satisfaction is measured through general dimensions such as novelty, sociability, achievement, aggression, self-awareness, and enjoyment. The 'discrepancy' model is being widely discussed in this paper and its modification is one of the major recommendations of the study. The 'hedonistic' model highlights those aspects that contribute to individuals' well being and happiness.

3.4 SUMMARY

Direct visitor satisfaction measurement research is minimal in the tourism literature. Research in areas that have direct effects on visitor satisfaction has been more prominent. These include motivation, social impact, and carrying capacity studies. The quantitative approach has been the more commonly used, although the qualitative approach is becoming more fashionable. The best results are achieved when a combination of relevant methods is used because visitor satisfaction is multifaceted, complex, and ephemeral. Literature (both tourism and environmental) is increasingly accepting the pivotal role that visitor information management plays on not only meeting visitor satisfaction but also ensuring environmental protection.

4. Conclusions and recommendations

4.1 GENERAL CONCLUSIONS AND RECOMMENDATIONS

Ecotourism is the primary catalyst for the growth of an industry—tourism—that earns New Zealand more foreign exchange than any other. It provides funds for protection of the natural environment. There is thus a strong synergy between visitation and conservation. Visitor satisfaction is paramount. Measuring visitor satisfaction provides the feedback mechanism which identifies areas where improvements can be made to meet and exceed visitor expectations. However the satisfaction of visitors to protected natural areas is a more complex concept than it first seems, and is not easily measured.

Visitor satisfaction measurements need to be a part of an integrated management programme. Programmes such as the Ultimate Environmental Thresholds (UET), Recreation Opportunity Spectrum (ROS), Visitor Impact Management (VIM), the Management Process for Visitor Activities (VAMP), Limits of Acceptable Change (LAC), and the Visitor Experience and Resource Protection (VERP) provide benchmark examples for management specification of satisfaction topics and targets.

- Visitor satisfaction can be defined from different perspectives, including those of the international visitor, the domestic visitor, conservation managers, specialist experts, external groups and agencies, and future generations. All these perspectives and their inputs, governed by the Acts of Parliament and management policy, determine and define the legitimate concerns and future actions to ensure accountability and sustainability.
- Visitor satisfaction research has been focused more specifically on studies of motivation, carrying capacity, social impacts, wilderness perceptions, and tourist behaviour. Studies of satisfaction measurement and its techniques have been fragmented and sporadic.
- Visitor satisfaction can be measured in a multitude of ways ranging from listening to casual comments made by visitors, to the use of a comments box, to focus groups, and to standardised short or extensive questionnaire surveys. The various approaches can be divided into quantitative and qualitative, each having strengths and weaknesses; when used strategically together they complement one another.
- The generally agreed definition of customer (visitor) satisfaction is the discrepancy between what is expected (expectation) and what is actually received or experienced (perception). This review adds a new dimension, that of importance. Visitor satisfaction measurement methodologies have concentrated on measuring perceptions only. A new system of measurement involving expectation, perception, and importance (EPI) provides data far more suitable for management decisions.

- Academic literature on visitor satisfaction often finds limitations and pitfalls in any methodology. Lack of action often results as questions are answered with more questions. However, in the real and pragmatic world occupied by the visitor and the land manager, it is typically better to do something than to do nothing.
- The EPI methodology is a comprehensive, flexible, and economical method that can be further developed with practical use and theoretical research. Its flexibility and all-encompassing nature are demonstrated by its ability to incorporate both quantitative and qualitative approaches, its incorporation of the three major factors that influence satisfaction, and its adaptability to measure both service and product provided by any organisation. It is a tool for continuous improvement. It provides practical recommendations and an action list of priorities based on the satisfaction of visitors and what they consider important.

4.2 CONCLUSIONS AND RECOMMENDATIONS ACCORDING TO THE FOUR MAIN OBJECTIVES

Four specific objectives were designated for this report. To arrive at the following conclusions, considerable background research was conducted. Visitor satisfaction is a highly complex construct, consisting of multiple dimensions and items, many of which are related to attributes outside the context of the immediate visit. Some of these factors affect visitors during the actual visit, while others influence pre-visit expectations. These uncontrollable factors can be broadly grouped into two categories:

- Quality in other sectors of the tourism industry and industries peripheral to tourism (e.g. transport, hospitality).
- Advertising and promotion by other organisations (including other government organisations).

The measurement of satisfaction is both an art and a science, with considerable debate concerning the merits of various potential approaches. This report has reviewed a variety of potentially applicable satisfaction measurement approaches, considering them from the perspective of their implications for implementation in a natural area management framework.

Objective 1 Define what constitutes visitor satisfaction according to different levels of management information need

- Management levels range from those who are in direct contact with the visitor such as the front office receptionist in a visitor centre or the tour guide in a national park (local), to those who create policy at the agency head office, including the Minister of Conservation (national). The organisation is structured hierarchically.
- Visitor satisfaction to protected natural areas is the responsibility of everyone who works for the Department of Conservation. When the visitor is not satisfied, everyone is to blame; the Minister in charge bears systemic responsibility, while the front line service staff who are directly involved can bear local (but not systemic) responsibility.

- While visitor satisfaction information needs vary according to level, position, and tasks, generic visitor satisfaction information is useful for all management agency staff. As in any other type of team, the skills, tasks, and information are varied, but all team members know a little about the roles of other members as well as the generic needs of the team. This includes awareness of the overall purpose of the team, the nature of the situation, the chosen strategies and tactics, etc.
- At the local level information needs are operational, short-term, immediate, specific, and individual. At the national level information needs are strategic, long-term, future oriented, and generic. Further, the national level has an occasional need to drill down to highly detailed local-level information, and therefore requires access to that information. Those at the local level should be aware of the information needs of the national level and vice versa.
- At the local level the visitor centre receptionist needs to know directions, bus timetables, weather forecasts, etc., while the tour guide needs to know the names of trees, details of track routings, etc. At the national level policy makers need to know that some visitors want to party in a hut while others want quiet and solitude. Both levels should be aware of the range of information available and how best to access it, whether that be online or on paper, through the staff, or by indicating that the visitor should contact another designated source.
- Management level information needs vary according to type of activity. White water rafting, hunting, tramping, bird-watching, and swimming with dolphins require different sets of management knowledge, skills, and treatment—and hence different specific types of information, localised according to the particular activity and situation.
- There are thus generic and specific information needs that will differ for nearly every member of DOC staff. Information needs should be analysed on an individual basis, recognising that both roles and individuals filling those roles will impact on the requirements of a given position.
- Information systems design and management within the Department should take into consideration the needs of a wide range of actual and potential users, including external and internal, visitor and employee, student and armchair surfer, supplier and customer, public (government) and private (commercial), etc. This applies equally to computerised and non-computerised information acquisition, storage, and dissemination systems. The content, level, and access for all these information users deserve separate consideration, and are outside the scope of this report.

All of the above considerations affect generic information needs that lead directly to the specific information needs regarding visitor satisfaction. Staff at all levels should be aware that information itself is a key factor in visitor satisfaction. One of the principal functions of staff with regard to visitors is provision of suitable information. Only a tiny proportion of the information that visitors will be given is about visitor satisfaction per se; that type of information is intended almost entirely for use within an agency.

The definition of 'visitor satisfaction' itself reflects the temporal orientation of the staff at various locations and levels within an agency. Definitions of 'visitor' and 'satisfaction' are explored in depth elsewhere in this report (including in the appendices). With respect to the first objective for this report, these definitions can be briefly summarised as:

- For local (on-site) staff and management, 'visitor satisfaction' constitutes the momentary perception on the part of the visitor regarding the difference between the visitor's expectations and perceptions of the actual visit.
- For national staff and management, 'visitor satisfaction' is the long-term, generalised impression linking expectations and perceptions on the part of the visitor, regarding the overall experience related to protected natural areas under management. This includes consideration of pre-visit information, contacts with staff during the actual visit, encounters with other visitors, interaction with facilities and infrastructure, post-visit communication with other visitors and staff, and personal reflection by the visitor.
- The satisfaction of individual visitors is primarily the domain of local staff, whereas the average and range of satisfaction experienced by the entire body of visitors is primarily a managerial concern (at the local, regional, and national levels). Regional and national data aggregations should present not only average findings, but also exceptional instances (outliers), as these may highlight areas where change is most appropriate or most urgently required. Such visitor satisfaction information may be negative (complaints) or positive (suggestions).
- Visitors may not consciously differentiate their experience according to levels of management hierarchy, but underlying their conclusions will be an inherent understanding of the roles of staff at various levels. It is unlikely that a local receptionist will be blamed for lack of available infrastructure, whereas it is likely that the same person would receive blame for a lack of suitable maintenance and presentation of existing facilities. Higher-level personnel would be seen as responsible for systemic or long-term decisions, and local staff for implementation and minor decisions. Similarly, local personnel would hear complaints about but not be seen as responsible for major information inaccuracies (such as errors on brochures and maps), but would be held accountable for localised current information (such as regarding the availability of toilet paper, status of a footbridge, etc.)
- Visitor satisfaction at all time points (before, during, and after the visit) thus relates to both local and national staff and information, with differing degrees of responsibility and therefore varying needs for information about both visitor satisfaction and the visit itself.
- The importance of information, including visitor satisfaction information, is time-dependent in two ways: First, timeliness of information availability affects satisfaction; second, satisfaction itself is temporal, with visitor impressions of satisfaction stretching and fading over time. Hence, it is essential that not only information content but its timely availability be considered—for both agency staff and visitors.

Both visitor satisfaction and information regarding it should be seen from a systemic perspective. The purpose of collecting and analysing such information is to better manage visitor satisfaction; this must be accomplished within the framework of potentially conflicting mandates within which a conservation agency operates. All information and actions based on that information, should be considered in light of their impact on the overall management system.

Objective 2 Describe the basic features of visitor satisfaction and the common measures used in satisfaction assessments

- The basic features of visitor satisfaction, and consequently appropriate measures, can be seen from the perspectives of visitor needs, conceptual components of satisfaction, time, scale, responsibility, and impact.
- The conceptual components of visitor satisfaction can be measured, albeit employing subjective assessments rather than objective (directly measured quantitative) ones. This is both necessary and appropriate because satisfaction itself is subjective in nature. Properly constituted, these measures can relate to visitor needs (actual or perceived), variation over time, determination of responsibility, and level of impact. Properly combined, they can indicate level of satisfaction.
- The conceptual components of visitor satisfaction are the expectations and perceptions of the visitor, combined with the importance the visitor places on each aspect or factor under consideration. The relationships among the three components, rather than the components themselves, determine satisfaction.
- Common measures of satisfaction, in whole or in part, include expectations, perceptions, and importance—separately, in pairs, or all three together. A variety of approaches exist, including some with generally accepted names such as SERVQUAL and IPA. The newest of these is the only one to combine all three measures, at present known as EPI. This approach was developed at the University of Otago, and is being refined for application in visitor satisfaction measurement.
- Discrepancies between expectations and perceptions on any individual factor or collection of factors can be examined to determine the origin of the difference, be it favourable or unfavourable. A series of 'gaps,' primarily related to communication and interpretation, provides a framework within which such analyses can be structured to facilitate improvement efforts as well as to identify sources of responsibility for the discrepancies.
- Key among the agency-controllable features of visitor satisfaction is the appropriateness of the categorisation of the wilderness level of the protected natural area. This categorisation impacts on the type and level of expectations held by the visitor. A mis-labelled wilderness level, or an inaccurate description of the difficulty of a route, availability of facilities, degree of crowding, etc., can form the basis of expectations that are impossible to fully satisfy.
- Visitor satisfaction is not constant over time. Expectations, perceptions, and importance all vary temporally, as all are subjective and influenced by subsequent developments and information. Thus, the timing of the collection of satisfaction measures is important.
- Timing of satisfaction information collection can vary—prior to, during, or after the visit are all valid moments, each representing a different set of reliabilities and accuracy as well as opportunities to affect subsequent development of the data. For example, requesting perception values prior to a visit is feasible, although the data will represent anticipated perceptions rather than actual perceptions. It is still possible to affect anticipated perceptions, as well as expectations, prior to the visit. Importance data will likely vary over these broad time categories as well, with the actual experience providing the visitor the opportunity to alter the relative and absolute importance of factors.

- Recollections are valid measures of satisfaction, reflecting satisfaction at the moment of measurement. Given that visitors convey their momentary level of satisfaction to other potential visitors when requested to do so, detailed knowledge of the evolution of satisfaction is valuable as it enables determination of the most suitable timing and type of intervention to enhance satisfaction. This is an area where future longitudinal research is warranted.
- Visitor satisfaction is influenced by factors that are within and outside of agency control. They may be related or unrelated to the specific visit (e.g., a letter with bad news from home), and of varying degrees of apparent relevance to the specific factor being measured (e.g., lack of a tin opener at lunch can spoil the view over the valley below).
- Factors affecting visitor satisfaction may be categorised according to a hierarchy of needs: physical, security, social, psychological, and self-actualisation needs.
- The management agency is not necessarily directly responsible for fulfilling all of these needs, but is at least partially responsible for ensuring an environment within which they can be addressed by either the visitor or other relevant parties.
- Physical needs include shelter, food, and drink; these are supplemented by physical convenience needs such as the availability of rubbish bins and toilets. Likely attributes to be measured in a visitor centre would include convenience of location, availability of parking, and accessibility for people with a disability.
- Security needs refer to personal safety and security of personal belongings. Likely attributes to be measured in a national park would include perceived sense of security, actual instances of theft, and vandalism to parked vehicles. Security concerns also comprise natural, as well as human, causes; relevant measures would include avalanche casualties, cases of hypothermia, and instances of attack by wild pigs.
- Social needs refer to the visitor's choice to be with other people or to be alone. Likely attributes to be measured on a walking track would include number of people encountered, percentage of capacity occupation of a hut, and volume of flyovers by aircraft. Other attributes include nationality of people on the track, the languages spoken, and the degree of interaction with other people.
- Psychological needs relate to the mental state of an individual. They include wanting to learn, to appreciate nature, to relax from urban stress, and similar personal requirements. As these needs are highly internal and have few physical manifestations, they can be measured only by inquiring into the mind of the visitor, using perceptual measures. Examples of these include perceived reduction in stress, quality of learning experienced, and increased level of happiness following a visit.
- Self-actualisation needs are regarded as the pinnacle of individual human achievement, extending a person's capabilities to new heights. Such needs are often expressed through the challenge of proving oneself via physical tests such as climbing a high mountain or feeling spiritually uplifted through being close to nature and appreciating breathtaking scenery. Self-actualisation needs are highly individual, as are the avenues chosen to address them; therefore, specific generic measures are unlikely to give adequate insights into their

satisfaction. Building on the psychological needs as a foundation, likely measures could include sense of attained spiritual uplifting, increased sense of self-worth, and perceived 'natural highs' experienced during a visit. More concrete measures have been proposed, such as the decibels emitted by bungy jumpers and the skill ratings of routes in climbing a mountain, but these surrogates do not account for the highly individual nature of needs at this level.

- Factors that affect visitor satisfaction vary by type of visitor. One visitor might be interested only in some factors while another is interested in all. There is also variation within the factors. One visitor might consider solitude to be only five people at arm's reach while for another it means no other human beings within a five-kilometre radius. A variety of measurement approaches is therefore appropriate.
- Factors that affect visitor satisfaction vary according to the activity engaged in by the visitor, the type of visitor, and various individual (visitor-specific) factors. Some of these are within the potential control of agency staff, while others are clearly externalities (e.g., traffic conditions on major highways leading from cities to wilderness areas).

The goal of visitor satisfaction measurement should be understood in the context of an agency's management of protected natural areas. The goal is not to maximise, but to manage visitor satisfaction. Careful choice of the measures of visitor satisfaction, and judicious interpretation of the results, will best allow an agency to satisfy its own multiple goals connected with the management of protected natural areas.

Objective 3 Describe recommendations to overcome limitations in different satisfaction assessment approaches for the different levels of management information needs

- Visitors do not want to be continuously asked for feedback. Questionnaires are time-consuming and expensive. A balance can be struck by utilising effective methodologies in an integrated manner, building on existing research and collaborating with others.
- Other ways of obtaining visitor satisfaction information without pestering visitors include a variety of techniques. Examples include analysing journals, published reviews, guidebooks, and news and magazine articles; benchmarking through studying other leading edge environmental management systems; use of 'mystery shoppers' and agency staff on site visits; first-hand and second-hand information collection by guides and contact staff; and selection of limited numbers of suitable visitors for focus group sessions.
- A particularly fruitful source of information on visitor satisfaction is the travel professional, who will have contact with the visitor both prior to and following the visit. This may be a domestic travel agent or an overseas specialist or generalist. The visitor's expectations may be strongly influenced by pre-visit conversations with, or advice from, such travel professionals. Management agencies and operators associated with tourism could seek both to gather information on satisfaction from, and to influence future satisfaction through, such advisors and agents. This may be accomplished through travel incentive packages, as is done in other sectors of the tourism industry, or through an information dissemination and collection campaign.

- At the lowest level (local), very little intrusion is necessary to obtain information from visitors. Highly trained staff, through their direct communication with visitors, are able to intuitively appreciate trends by simply listening and asking. This skill can be enhanced through appropriate training. Information about visitor satisfaction can be obtained from staff through staff focus groups and questionnaires. Senior managers, by having frequent direct communication with frontline staff, can develop intuitive appreciation of visitor satisfaction trends.
- At the highest level (national), visitor satisfaction information can be obtained through carefully collected, detailed data either on specific issues of interest or on broad overviews (to identify arising issues), or both, on an ongoing and longitudinal basis, with an emphasis on discovery of trends as early as possible (hence requiring frequent periodic re-evaluation). These can be achieved through focus groups and questionnaires.
- The value of improved internal communication, diminishing the loss of knowledge between levels of the organisation, should not be underestimated. Enhanced communication is likely to result from universal adoption of a systemic perspective, wherein all members of the organisation have full appreciation for and commitment to the goals of the organisation.

Objective 4 Provide recommendations for different satisfaction assessment approaches for the different levels of management information needs

- Differing information needs imply variation in the most suitable methods for collecting that information. No approaches are universally equally applicable, but likewise most approaches have some validity in a variety of situations and in addressing multiple information needs. The choice of method for use in a given situation is thus typically neither easy nor identical for different individuals.

Selected satisfaction assessment approaches and the ways in which they can address various levels of management information needs are itemised below.

- **Listening** All levels of management should listen to the voice of the visitor. The frontline staff intuitively appreciate what the visitor wants in the course of ongoing interaction with visitors as part of their job. They should also consciously but informally ask visitors for their opinion, and collect this data for subsequent analysis at both local and higher levels (this can be facilitated by preparation of check sheets or other simple data collection forms). All other management levels should listen to the visitor's voice through communication means that accurately and promptly transfer what the frontline staff heard. Listening occurs continuously, through every minute of interpersonal contact, on the job and off, throughout the year. Listening is extremely flexible, and can provide unanticipated insights. It is also one of the least expensive, as well as least rigorous and reliable, information collection methods.
- **Focus groups** Consisting of seven to twelve visitors who share the same characteristics, focus groups meet for (perhaps) two to three hours to discuss a predetermined topic. The focus group is under the supervision of a skilled moderator. Focus groups produce information that other methods cannot obtain, such as consensus opinions following live discussions based on multiple

opinions often generated via brainstorming. Focus groups are applicable to all management levels.

- **Visitor satisfaction cards** Providing a very limited number of questions on a postcard or drop-box card, these should be available at visitor centres and departure/return points. The purpose of such cards is to obtain ongoing indicative feedback from as many respondents as possible, with as little time commitment by the respondents as possible, while preserving anonymity and incurring minimal expense.
- **Questionnaires** Ranging from short to long; from single administration through repeated (longitudinal) to continuous; and from paper to telephone, Internet, or fax, questionnaires exhibit a great variety of forms and possibilities. They can be employed at all management levels to accomplish a range of goals, but are particularly useful at providing anonymous summarised feedback via quantitative measures and for collecting exploratory qualitative feedback and suggestions. Questionnaires can be used to identify individuals suitable for inclusion in subsequent deeper forms of research such as interviews or focus groups. One advantage of questionnaires is their ability to provide hard numbers representing large samples of people in a form suitable for presentation to the media for public discussion. The cost of questionnaires varies widely, depending on the method employed, the length, and the depth of analysis.
- **Review of journals, magazines, and newspapers** Academic journals are closely scrutinised by academics and often contain essential kernels of truth that generalise otherwise unrelated news items. However, the opinions of academics do not tend to set trends among visitors (although they try to explain them). Such trends are set by newspaper reporters and celebrities whose opinions are expressed in popular magazines. These range from 'travel features' to restaurant reviews. DOC management should ensure that such literature, from academic through popular, is continuously monitored both for evidence of new trends and for comments directly related to the New Zealand natural environment from a visitor perspective.
- **Study of guidebooks** Similar to popular press publications, guidebooks influence visitors, often establishing expectations before the visit. However, given their nature, guidebooks are considered more authoritative than other popular press reports and therefore have a stronger influence. They are also accessible for far longer periods than other reports, typically five to ten years (where a magazine article may be difficult to find after a few months). The levels of satisfaction experienced by guidebook authors can thus have an unduly large influence on future visitors, and their evaluation criteria can thus provide insight into areas where management should consider focusing attention. However, unlike newspaper and magazine writers, who are often provided complimentary travel in exchange for favourable stories, guidebook writers may interpret such offers as bribery attempting to impinge on their credibility and independence, with consequent negative influence on their published accounts.
- **Interviewing relevant professionals** Both travel sales professionals and tourism academics can provide insight into visitor satisfaction. Both influence expectations and provide standards for comparison. The range of information they can provide to an agency is perhaps greater than that of any other

source, as their jobs depend on their ability to gather, analyse, and disseminate information about multiple competing venues and activities—the travel agent from a practical perspective, the academic from a conceptual and theoretical one. Travel agents could provide information focused on a particular locale or activity, whereas academics would provide generalised information unless they had been involved in a specific study. Both can provide prescriptive guidance to target improvement, which can obviate the need for data collection by jumping directly to the outcomes of the analysis and the accompanying recommendations. However, both may have narrow perspectives and are not necessarily motivated by the same factors as a management agency.

- **Interviewing of guides** Internally-collected information can prove highly valuable to an agency, as staff are particularly committed to the success of the department's mission. Guides are at the interface between visitors and the department, and often observe events that provide meaningful information for management. Training guides and other contact staff to collect data through observation and conversation can prepare them to better accomplish this role. Such efforts can elevate the internal interface among levels within the hierarchy from simply 'listening' to active engagement, benefiting all concerned.
- **Direct research** Personal experiences by staff, including visiting on their own vacations as well as on arranged 'tours of inspection,' can provide one form of eyewitness management-level information. However, to adjust for desirability response bias, independent observers serving as 'mystery shoppers' can be sent into the field for the specific purpose of anonymously gathering information. As with all data collection approaches, direct visitation has positive and negative aspects, and must be understood and managed carefully to maximise the benefits while minimising the downsides.
- **Benchmarking** Through studying other leading-edge environmental management systems, an agency can determine whether it is at the forefront worldwide or if there is something to be learned elsewhere. Visitor interaction with the natural environment and ways to manage the effects of this interaction are 'hot' research topics both in New Zealand and abroad; thus, any participant has something to offer as well as something to gain. This is a key prerequisite for a successful cooperative benchmarking venture.

Satisfaction assessment approaches are driven by the organisation's culture for quality and customer service. Passion for service empowers all staff as they strive to meet and exceed the needs, wants, and expectations of all visitors. Different levels of staff can gather, analyse, disseminate, and implement different forms of information and knowledge, as represented by the range described above.

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Appendix 1. Definitions and terminology

A1.1 INTRODUCTION

Visitor satisfaction and environmental protection are relatively new areas of research. Consequently, understanding of the various concepts involved and the words used to describe them has been disjointed. It is paramount that definitions of key terms are made clear to avoid the confusions and contradictions that pervade much of the literature on the various aspects of these two fields. In essence these definitions are globally accepted originating from a common source and now permeating diverse fields. The report attempts to reveal the universal aspect of the definition of each term. This is made possible by the recognition that

- the quality movement, both in theory and practice, has been the catalyst for success of both profit and non/profit organisations
- there is a link between the quality movement and systemic holistic philosophies expounded over the known history of humanity.

Key words such as customer, visitor, service, quality, satisfaction, expectation, protected natural areas, information sources and levels of management information needs, combine to demonstrate the gaps in a fragmented structure. When the structure is integrated, the environment evolves and innovates in its interaction with visitors. Visitor satisfaction measurement is the mechanism that directs environmental protection.

A1.2 CUSTOMER

In any service encounter there are several types of customer involved. The first distinction is that between the internal customer and the external customer. The external customer pays for the service or product. The internal customer refers to the relationship that exists between the staff that provides the service and/or product to the external customer. The relationship between internal customers, like that with external customers, involves the transference of services that has implications on the relationship with external customers. The key difference between internal and external customers is highlighted when a conflict arises between service to be supplied to the internal customer and that to the external customer.

Chakrapani (1998, p. 58) asks the question, 'Should an employee concentrate on external customers, who are the basis of the business, or on the internal customer, who may have a say on the future of the employee within that organisation?' Another distinction that requires clarifying is the customer such as a drug addict or alcoholic. There is also the customer, who has been created by the force of advertising and promotion, the victim of consumerism. Should we cater for the whims of the drug addict and the alcoholic? How many visitors should be allowed into New Zealand?

We also refer to customers of today and those of tomorrow. Customers of today include everybody living today. Customers of tomorrow refer to future generations. Customers of today are obligated to ensure sustainability of resources for those of tomorrow. The word 'stakeholders' is also used to represent those who have an interest in the business or organisation that provides the service or product.

In the case of protected natural areas, the internal customer includes all the staff working for the Department of Conservation, the external customer includes all visitors (domestic and international). Stakeholders include all New Zealanders. Customer identification refers to the target market or market segment. While all the people in the world are potential customers, they are not all the same and consequently the product or service provided will not match the needs and wants of every customer (Leppard & Molyneaux 1994). Matching the service to the customer and then informing the customer of the service provided is an essential component of the service cycle and leads to customer satisfaction (Figure A1.1).

Figure A1.1 identifies the relationships that exist between participants in the service cycle, including internal suppliers and internal customers as well as external customers. The gap that exists between the customer's expectations has come about because of gaps that exist in other relationships (Heskett et al. 1994).

Parasuraman et al. (1985) identified the gaps within an organisation that contribute to service quality problems. Within any organisation, four potential gaps were identified. They exist between:

1. the manager's perceptions of customers' expectations and the actual expectations of customers
2. the manager's perceptions of customers' expectations and their translation into specifications
3. the manager's specifications of his/her perceptions of customers' expectations and the actual service delivery
4. the service delivery and what is communicated to external customers

These four gaps result in the creation of a fifth gap, which is the difference between the expectations of customers of the service quality and the perceptions of the customers of the service quality that they actually received.

Two further possible gaps can be identified, namely the gap that exists between the actual service delivery and the customers' perceptions of the actual delivery (gap 6) and the gap that exists between what is communicated to the customers and the customers' perceptions of the actual service delivery (gap 7).

All the above gaps contribute to a failure to meet the paying customers' (visitors') expectations. Management has within its power to take steps to avoid all the gaps except gaps 6 and 7. The customers' perceptions of the actual service delivery (gap 7) are dependent on many variables, one of which, is the gap that exists between what is real and what is communicated to the customers (gap 6). The sources from which paying customers get information are a measurement of customer satisfaction.

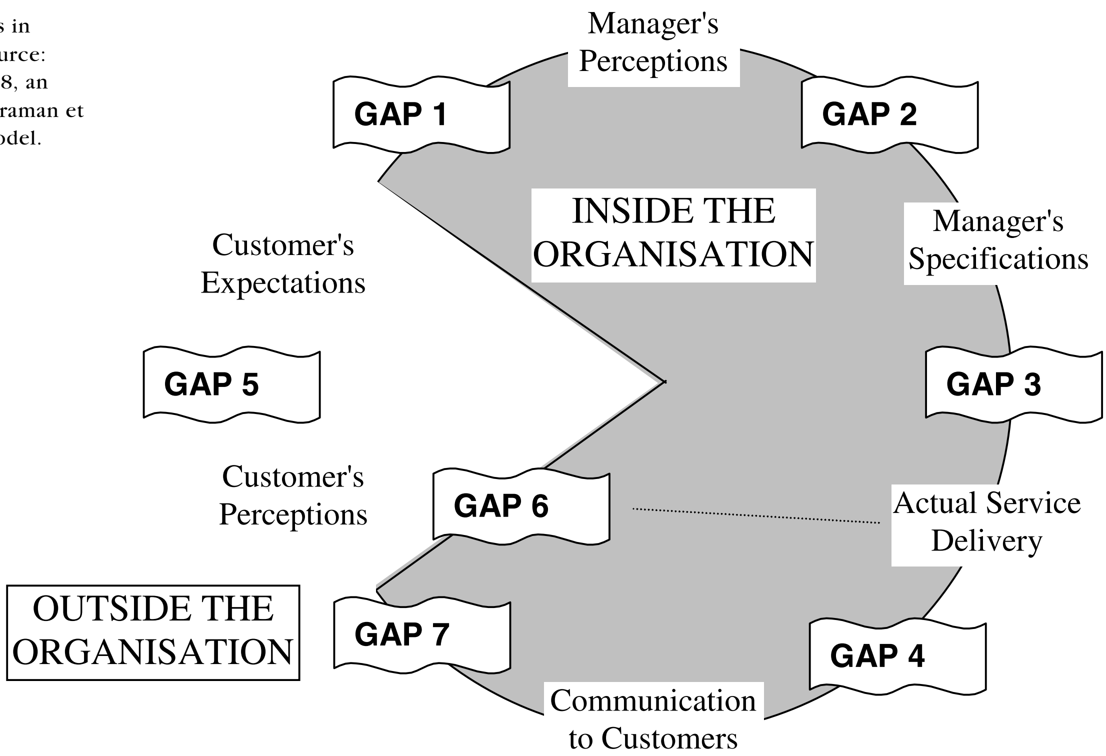
A1.3 LEVELS OF MANAGEMENT INFORMATION

The seven gaps are levels of management information communication that exist within components of an organisation. In the case of protected natural areas, a particular site and its management is an example of a management level that requires information. Other management levels in the hierarchy include: the Regional Manager, who is in charge of the Site Manager; the National Director, who is in charge of the Regional Manager; the Chairman of the Board, who is in charge of the National Ddirector; the Minister of the Eenvironment, who is in charge of the Chairman and the Board; and the Prime Minister who is in charge of everyone. The information that is communicated between all these management levels must remain consistent with the information that is passed to the visitor to protected natural areas.

A1.4 SOURCES OF INFORMATION ON SERVICES PROVIDED

It is generally recognised that 'word of mouth' or friends and family are the most influential source of information on any likely place to visit. Advertising and promotion are direct methods of spreading information about a protected natural area. Advertising and promotion often aim to create desires in prospective visitors instead of giving information about the service to be provided. This is an area where the provider has control of the information. Films, television, books, and magazines are other influential sources of information on a destination.

Figure A1.1. Gaps in service quality. Source: Latu & Everett 1998, an extension of Parsuraman et al. 1988's 5-gap model.



Magazines, books, and similar sources of information are useful for the visitor (external customer) as they serve as an indicator of visitor satisfaction, hence simultaneously providing the manager with independent measurements of visitor satisfaction, however informal or subjective. Such sources can be fairly powerful as they are looked upon by the prospective visitor as more objective and informative. The following quotation, for example, highlights the clout of the travel guide series 'Lonely Planet': 'Britain's top tourist attractions were mildly indignant yesterday after they were conclusively written off by an Australian-based tourist guide for budget travellers' (ODT, 28 April 1999, p.16).

Research has also shown the effects on tourism (specifically on visitor numbers) of films, for example 'Braveheart' in certain parts of Scotland, and television programmes, for example MASH in South Korea. Australia too has benefited from the popularity of the 'Crocodile Dundee' character (Riley & Van Doren 1992; Riley et al. 1998).

A1.5 VISITOR

A visitor is a not a subset of 'customer'. In the case of protected natural areas, all external customers are visitors. Internal customers are not visitors. Internal customers include all those who work in the department that administrates and co-ordinates the management of protected natural areas. The Department of Conservation defines it as, 'For the purpose of this strategy, visitors are people visiting areas managed by the department. They include people using visitor centres and clients of concessionaries, New Zealand and international visitors' (DOC 1996, p.2).

A1.6 TOURIST

A tourist is a subset of 'visitor'. There are two types of tourists—international and domestic. There is no commonly agreed definition of a 'tourist' or 'tourism'. Authoritative organisations such as the World Tourism Organisation (WTO), Governments and Regional Councils follow an official definition that they recognise. In the case of protected natural areas the term 'visitor' includes all tourists (international and domestic), all external customers, and stakeholders. This report will adopt a broad definition of tourism to include all activities that involve 'a combination of leisure and recreation as well as human travel and sightseeing' (Butler 1991).

A1.7 SATISFACTION

Even though it is generally recognised that customer satisfaction is the key to the success of any organisation, there is confusion in its definition and how it can be achieved. Tourism marketing and management literature is united in recognising service quality as the answer to attaining customer satisfaction but problems persist because of the difficulty in defining and measuring the service quality construct (Crosby 1979; Garvin 1983; Carman 1990; Cronin & Taylor 1992). Furthermore there are other difficulties including the definitions of the various terms and the relationships between the terms, such as those 'between service quality, customer satisfaction, and purchasing behaviour'(Cronin & Taylor 1992, p.55). Customer satisfaction can be defined as when the customer's expectation of the service provided matches his/her perception of the actual service received (Sasser et al. 1978; Gronroos 1982; Parasuraman et al. 1985).

The two vital components of visitor satisfaction are 'expectation' and 'outcome of a certain experience' (Bultena 1969; Pizam 1978; Ryan 1995). In tourism studies satisfaction is a component of consumer-behaviour studies and is the outcome of motivation (Moutinho 1987; Gnoth 1990, 1997). Motivational studies are common (Beard & Ragheb 1983; Lounsbury & Hoopes 1985; Mills 1985). Satisfaction is also studied as a major component of geographical impacts (O'Neill 1994; Higham 1996) and social impact (Lawson et al. 1996) studies. Geographical and social impact studies combine to form carrying capacity studies (Kearsley 1997a, 1997b). In relation to visitors, motivational studies are demand driven while geographical and social impact studies are supply driven. Customer (visitor) satisfaction measurement studies should encompass both demand and supply perspectives.

A1.8 EXPECTATIONS

The critical issue regarding the definition of expectations and in the context of measuring methodologies is whether 'expectations' is the same as 'importance'. Several authors have argued that they are synonymous and that it is futile to include both aspects in a measurement tool formula. However, Latu & Everett (1998) argued that they are different, although positively correlated, and backed their assertion by empirical evidence (illustrated in Fig. A1.2). Expectations are prejudiced by individual attitudes, which are influenced by learning and experience. Attitudes change over time, continuously being modified by learning and experience

A1.9 QUALITY

Concerning the definition of the concept of quality, the authors contend that the confusion begins not only with the many definitions of quality, but is also due to the debate on the distinction between, or sometimes inseparability of, service and product (goods). Researchers (Fitzsimmons & Fitzsimmons 1998; Parasuraman et al. 1985) have attempted to separate quality from service quality through the distinguishing of service from product/goods. This is especially common amongst those with a marketing approach to quality. This problem is not apparent among the early quality pioneers such as Deming (1986), Feigenbaum (1956), Juran (1974), Ishikawa (1986), and Crosby (1979). When attempting to answer questions regarding quality such as 'What are we measuring?' 'Is it an attitude?' 'Is it customer satisfaction?' 'Is it an encounter?'

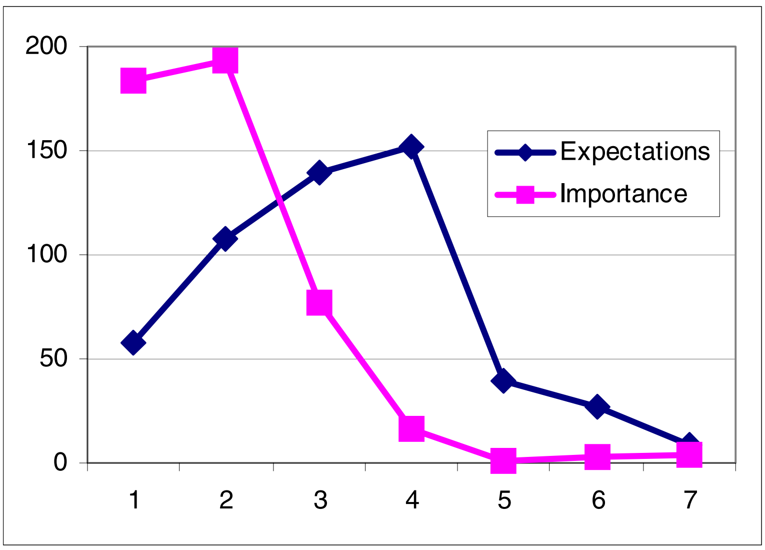
'Is it a service encounter?' 'Is it a product?' 'Is it a service?' 'For what purpose are we undertaking this measuring process?' we are faced with a glaring contradiction in terms. This report recognises that customer satisfaction occurs over time and space and is influenced by a continuous process. This process is quality when its purpose is to meet customer expectation. Quality is measured by 'the discrepancy between what the customer expected and what the customer actually received, multiplied by the importance that the customer placed on that particular attribute' (Latu & Everett 1998). Chakrapani (1998, p. 4) defines quality thus, 'a product or service has quality if customers' enjoyment of it exceeds their perceived value of the money they paid for it,' and again 'In a competitive market, the product and/or service with the highest quality is the one that provides the greatest enjoyment'. In both of Chakraprani's definitions, comparisons are being made.

A1.10 PROTECTED NATURAL AREAS

Protected natural areas can be defined as those areas designated by Parliament, through the Conservation Act 1987 and the Resource Management Act 1991, to be protected for the enjoyment of all New Zealanders and those that visit New Zealand. Both conservation and recreation are advocated by the Act. 'To the extent that any use of any natural or historic resource for recreation or tourism is not inconsistent with its conservation, to foster the use of natural and historic resources for recreations and to allow their use for tourism' (Part 11, section 6e). The Department of Conservation's vision is that 'by the year 2000, New Zealand's natural ecosystems, species, landscapes and historic and cultural places have been protected; people enjoy them and are involved in their conservation' (DOC 1996).

With reference to national parks (NPRA 1983), the 1980 National Parks Act define them as 'areas of New Zealand that contain scenery of such distinctive quality, ecological systems, or natural features so beautiful, unique, or scientifically important that their preservation is in the national interest' (S 1). The Act identifies the following three areas as requiring specialised

Figure A1.2. Sample Comparison Between Expectations and Importance (540 Replies). Source: Latu & Everett (1999).



management attention: 1) Specially protected areas (S 12), to which access is by permit only. 2) Wilderness areas (S 13), in which huts and tracks may be permitted with no vehicles or animals allowed into the area. 3) An amenities area (S 15), where recreational and related amenities that are appropriate and will provide services that will contribute to the public's enjoyment of the park.

A1.11 DIFFERENCES BETWEEN SERVICES AND PRODUCTS (GOODS)

Marketing literature has been insistent on defining the differences between services and products (goods). The authors accept the necessity of understanding the nature of these differences as these either support or discredit the need to separate production industries from service industries. Unnecessary confusion will be removed with a clarification of this debate. Furthermore an argument to a lack of distinction between the two will lead to 'a non-fragmentary approach towards the formulation of an all encompassing tool for the measurement of customer satisfaction' (Latu & Everett 1998, p. 17.2).

Latu & Everett (1998) presented strong arguments to show that those indicators that authors have used to distinguish service from products also apply to goods and manufacturing industries. These indicators include intangibility of products, perishability, customer participation in the process, simultaneous production and consumption of product, consumer selection of location, labour intensity of industry, and the difficulty of measuring service.

Part of the problem stems from the word 'service' itself having so many connotations. Service is used to represent all non-manufacturing operations. It is also used to describe the special personal treatment or 'pure service' which is part of the interaction between customer and staff. It also has several other meanings which all add to the confusion.

Appendix 2. The SERVQUAL measurement formula

Initially the measurement instrument SERVQUAL was developed using ten separate dimensions for assessing service quality. They are tangibles, responsiveness, credibility, competence, understanding of the customer, reliability, communication, security, courtesy, and access. These ten dimensions were grouped into a questionnaire consisting of 22 criteria. Following further research the ten dimensions were reduced into five dimensions, as outlined in Table A2.1.

The questionnaire consists of two scales, titled expectations and perceptions. The expectations scale is a set of 22 statements representing the five dimensions that describe what customers expect of an excellent company. The perceptions scale is a set of 22 matching statements describing what the customers actually thought of the service. The measures are recorded on a seven-point Likert scale with the verbal anchors 'strongly agree' and 'strongly disagree.' The discrepancy between perception and expectation (termed the P-E gap) is "a measure of 'service quality'. It is considered distinct from measures of satisfaction, on the basis of the nature of the expectations included and the timing involved. Perceived service quality is a global judgement or attitude relating to the superiority of the service, whereas measures of satisfaction relate to a 'service encounter' (Smith 1995, p. 259). A distinction is being made between a global judgement and a service encounter. Service quality is a global judgement while satisfaction is the consequence of an encounter. Service quality is a process or an amalgamation of service encounters. Satisfaction and dissatisfaction are expressions of measurements, whether specific or global. They change over time and space. Similarly what is satisfying in one place might not be in another.

TABLE A2.1. THE FIVE DIMENSIONS OF SERVQUAL. SOURCE: PARASURAMAN ET AL. (1988).

Tangibles	The physical facilities, equipment, and appearance of personnel
Reliability	The ability to perform the promised service dependably, accurately, and consistently
Responsiveness	The willingness to provide prompt service and help customers
Assurance	Employees' knowledge, courtesy, and ability to convey trust and confidence
Empathy	The provision of caring, individualised attention to customers

Appendix 3. Modification of SERVQUAL to EPI

Extensive modifications to the SERVQUAL formula have resulted in a new methodology, which we have designated 'EPI' (Expectations, Perceptions, and Importance). This section of the report describes the origins and pedigree of the EPI approach. The SERVQUAL formula has been modified because existing ambiguities are being removed. For example, the term 'service quality' is being replaced with 'quality.' Parasuraman et al. (1988) distinguished service quality and satisfaction. In 1994, they decided they were the same. 'In the past (we) have distinguished between the two (service quality and satisfaction) according to the level at which they were measured … However, on careful reflection, we now believe that this distinction may need to be revised' (Parasuraman et al. 1994, p. 112). The term 'service quality' is ambiguous and seems to imply the non-inclusion of products, or a differentiation of service from product. On the other hand the word quality is all-inclusive. Concepts such as process, service, product, customer (internal and external), price, value, service quality, satisfaction, encounter, experience, and image are encompassed by the word quality. The complexity of the concept quality and thus service quality is accentuated when considering that it often refers to something ephemeral and unattainable but sought after, such as the Holy Grail. The various combinations of the EPI formula provide practical steps to follow in the quest to meet and exceed the needs, wants, and expectations of the customer.

The SERVQUAL formula has also been modified through the addition of the importance set to the expectations and perceptions sets, resulting in three sets (or dimensions). Some researchers regard the importance set as a repetition of the expectations set. They argue that the customer who has a high expectation of an attribute will consider the attribute high in importance as well. Figure Two provides just one example of empirical differences between expectations and importance ratings from our research, confirming that these concepts are distinct for the respondents. We have obtained substantial evidence, both quantitative and qualitative, to support our position that the two concepts are significantly different in the present context.

'Quality is the discrepancy between what the customer expected and what the customer actually received, multiplied by the importance that the customer placed on that particular attribute.' The EPI basic formula can be summarised as quality rating = (perceptions – expectations) × importance. [The basic formula applies for a scale where 1 = low; if a scale with 1 = high is employed, 'expectations – perceptions' will be used, and 'importance' must be inverted using the formula (n + 1 – I) where n is the scale maximum (say, 7 or 9).]

Another modification to the SERVQUAL model relates to the five dimensions and the 22-item format. The five SERVQUAL dimensions are not discarded; they become the signposts on which more dimensions are built, determined by the customers (internal and external) of the service and the provider. The dimensions become more flexible because they are no longer restricted by service/product distinctions. Their sphere is now expanded by the

SAMPLE QUESTION WITH RESPONSES

EXPECTATIONS		**PERCEPTIONS**	**Importance to you**
(3)	Cleanliness of showers	(4)	① ② ③ ④ ⑤ Ø ⑦

*This person's "**expectation**" was for "moderately low" (3) cleanliness; however, the "**perception**" of actual cleanliness was "medium" (4). Cleanliness is of "high" ⑥ "**importance**" to this person.*

EXPECTATIONS		**PERCEPTIONS**	**Importance to you** **Lo** **Hi**
(___)	Attractiveness of dining room	(___)	① ② ③ ④ ⑤ ⑥ ⑦
(___)	Freshness of vegetables	(___)	① ② ③ ④ ⑤ ⑥ ⑦
(___)	Hygiene standards of kitchen staff	(___)	① ② ③ ④ ⑤ ⑥ ⑦
(___)	Ease of reading notice boards	(___)	① ② ③ ④ ⑤ ⑥ ⑦
(___)	Friendliness of receptionist	(___)	① ② ③ ④ ⑤ ⑥ ⑦

Figure A3.1. EPI Question Format. Source: Latu & Everett 1999.

comprehensiveness of quality. The 22-item format is also found to be too restrictive, and it is expanded to suit the needs and requirements of different organisations. The question format and the wording are modified to facilitate more spontaneity (Figure A3.1). This is a departure from the SERVQUAL procedure of completing the expectations set before starting the perceptions set. The EPI format facilitates the completion of the three sets of each attribute individually and at the same time, thereby easing the respondent's ability to compare the three scores, as we contend that it is important for the respondents to make a conscious comparison between what they expected and what they received. (The format of the third set, importance, is intentionally distinguished visually from the format for expectations and perception, which are visually linked.) This procedure mirrors the formula's aim to measure a total view that is determined by what the respondent thinks and feels of the service process when completing the questionnaire.

The EPI format just presented is the culmination of a process that included numerous steps, briefly summarised as:

1. When designing a SERVQUAL questionnaire for a single residence hall to measure its foodservice, and some aspects peripheral to the foodservice, it was discovered that the SERVQUAL wording, the dimensions, and the 22-item format were too restrictive and could not encompass all of the 34 questions required.
2. In an initial study, the two-set format of expectations and perceptions was adhered to but the number of questions increased to 34 and the SERVQUAL wording system was not followed. The five dimensions were used as a point of reference only.

3. The SERVQUAL focus was found to be measurement rather than assisting management with future improvement. To meet the stated needs of the hall warden, extensive modifications (outlined previously) were created and pilot-tested on the same hall, with results deemed highly useful by management.
4. Other residence halls became interested in the questionnaire and the managers of those halls contributed their ideas to the design of a questionnaire, which was subsequently piloted on two residence halls.
5. This questionnaire was redesigned and administered in five residence halls with a total of a thousand residents.
6. A questionnaire was designed and administered in a gymnasium.
7. Another was designed to measure foodservice quality only at three residential halls, demonstrating that a change in the level of focus is possible and can produce useful results.
8. It is envisaged that the next stage is to develop an instrument for visitor satisfaction measurement in protected natural areas. Despite its limitations the work done by Roger James and Associates et al. (1996a,b,c) will be helpful especially in the area of identifying attributes.

Another major departure from the SERVQUAL approach is our addition of a qualitative aspect to the instrument. Qualitative data are obtained by encouraging the respondents to make comments on any part of the questionnaire and by supplying a comments page at the end. This potential was not abused, and has proven successful in over a thousand returned questionnaires. In the most recent survey, with 180 returns, 15,000 words of comments were received. This is quite extensive when compared with other studies involving students, including prior residence hall customer satisfaction

TABLE A3.1. ATTRIBUTE OUTCOME TYPES WITH SAMPLE CALCULATIONS. 1 = VERY LOW, 7 = VERY HIGH. SOURCE: LATU & EVERETT (1999).

ATTRIBUTE OUTCOME TYPE	EXPECTATION E	PERCEPTION P	IMPORTANCE I	ANTICIPATION E × I	PERFORMANCE P × I	GAP P − E	SATISFACTION OR QUALITY RATING (P − E) × I
A – Low E,P,I; no gap	2	2	2	4	4	0	0
B – Low E, Low P, High I	2	2	6	12	12	0	0
C – High E, Low P, Low I	6	2	2	12	4	−4	−8
D – High E, Low P, High I	6	2	6	36	12	−4	−24
E – Low E, High P, Low I	2	6	2	4	12	4	8
F – Low E, High P, High I	2	6	6	12	36	4	24
G – High E, High P, Low I	6	6	2	12	12	0	0
H – High E, P, I; no gap	6	6	6	36	36	0	0

TABLE A3.2. SUGGESTED RATING INTERPRETATION GUIDELINES. ASSUMING THAT E, P, AND I ARE SCORED USING A 7-POINT SCALE WITH 1 AT THE LOW END (AS SHOWN UNDER 'IMPORTANCE' BELOW). SOURCE: LATU & EVERETT (1999).

GAP		IMPORTANCE	SATISFACTION RATING	
+6 to +2	Extreme satisfaction	1 Very low	+42 to +15	Very high
+2 to +1	Major satisfaction	2 Low	+15 to +9	High
+1 to 0	Minor satisfaction	3 Moderately low	+9 to +3	Moderately high
0	No gap	4 Medium	+3 to −3	Medium/neutral
0 to −1	Minor dissatisfaction	5 Moderately high	−3 to −9	Moderately low
−1 to −2	Major dissatisfaction	6 High	−9 to −15	Low
−2 to −6	Extreme dissatisfaction	7 Very high	−15 to −42	Very low

surveys in the same halls. About one-third of the respondents did not write any comments.

The usefulness of the qualitative data was demonstrated in several areas. Because there were only a handful of vegetarians the quantitative data alone did not provide useful information on this sub-population. The handful of vegetarians made their presence felt with their strong comments. Qualitative data also gave information where no questions were asked on some particular aspects of the service. For example, no questions were asked on whether customers found foreign particles in food, but this was the focus of several comments. Qualitative data also supported quantitative data; for example, dissatisfaction with variety of fresh fruits was backed up by comments such as 'fruits were often bruised.' Additional closed and open-ended questions were also part of the questionnaire.

TABLE A3.3. EXAMPLE (EXTRACT) OF RESULTS. SOURCE: LATU & EVERETT (1999).

CODE	ATTRIBUTE	GAP	IMPORTANCE	SATISFACTION RATING
PE5	Cleanliness of bathroom facilities	−1.61	6.29	−9.63
HG7	Ease of telephoning into and out of the hall	−1.56	5.73	−8.47
LE3	Peacefulness and quiet in my room	−1.11	5.76	−6.69
LE4	Suitability of other rooms as places to study	−0.96	5.50	−4.92
LE5	Access to computers	−0.09	5.68	−0.08
FS18	Quantity of food at breakfast	0.43	2.38	1.65
FS1	Variety of food, overall	0.39	2.16	2.55

POSSIBLE MEASUREMENT RESULTS USING EPI

The eight possible types of measurement results using the EPI methodology, with sample calculations to illustrate each of the five measures described above, are portrayed in Table A3.1. Table A3.2 presents a guide for suggested interpretations of values, and Table A3.3 provides a sample excerpt of a list of service aspects rated for improvement. Note that the 'gap x importance = satisfaction rating' calculations do not appear accurate in Table A3.1; this is because the rating is calculated for each respondent, and the reported value is the mean rating, rather than taking the mean gap multiplied by the mean importance. This approach is believed to present a truer picture of the actual satisfaction of the pool of responding customers.

The ratings for improvement demonstrate the practicality of the instrument. An ordered 'to do' list, with rankings and ratings, is made available for the service provider. 'Cleanliness of bathroom facilities' is at the top of this sample list. Had the question not been asked the seriousness of this problem would not have been identified with a more general question. Similarly 'ease of telephoning into and out of the hall' is very important in a hall full of young people away from home for the first time.