emeraldinsight

International Journal of Quality & Reliability Management

Service Quality: The Gap in the Australian Consulting Engineering Industry
Danny Samson Rod Parker

Article information:

To cite this document:
Danny Samson Rod Parker, (1994),"Service Quality: The Gap in the Australian Consulting Engineering Industry", International Journal of Quality & Reliability Management, Vol. 11 Iss 7 pp. 60 - 76
Permanent link to this document:
http://dx.doi.org/10.1108/02656719410738993

Downloaded on: 07 March 2017, At: 17:07 (PT)
References: this document contains references to 13 other documents.
To copy this document: permissions@emeraldinsight.com
The fulltext of this document has been downloaded 2775 times since 2006*

Users who downloaded this article also downloaded:

(2003),"Attitudes to service quality – the expectation gap", Nutrition & Food Science, Vol. 33 Iss 4 pp. 165-172 http://dx.doi.org/10.1108/00346650310488516

(1994),"Service Quality: Concepts and Models", International Journal of Quality & Reliability Management, Vol. 11 Iss 9 pp. 43-66 http://dx.doi.org/10.1108/02656719410074297

Access to this document was granted through an Emerald subscription provided by emerald-srm:331081 []

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Service Quality: The Gap in the Australian Consulting Engineering Industry

Danny Samson and Rod Parker
University of Melbourne, Carlton, Victoria, Australia

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Introduction

Total Quality Management (TQM) has, arguably, provided the most useful vehicle for change in the practices and attitudes of managers in relation to quality issues. The quality revolution over recent decades has focused primarily on manufacturing enterprises and has been largely ignored by service organizations until recently. Manufacturing has led the way because the products made were tangible and transportable, thereby subject to broader, higher quality standards. Services industries, however, have traditionally been localized and protected, unable to transport their services easily and therefore unable to expose their services to international best practice. This is changing now in many industries, due mostly to advances in information technology. Consequently, practice and knowledge of TQM in service-providing establishments, that is service quality, is limited. This tardiness is likely to be a major cause of the slow uptake of service quality as a paradigm. We are compelled to ask: Are there other reasons why service quality has not swept across service-oriented organizations as TQM has with manufacturing enterprises?

We believe the seemingly less tangible nature of the operations and relationships between participants (customers and service providers) is another significant factor. Simply, it is more difficult to gauge the degree of satisfaction of a service transaction than it is to measure some product parameter (e.g. physical dimensions, smoothness, softness, purity). The measures of service quality are largely based on expections and perceptions, although there are some less subjective measures (e.g. number of rings on a telephone before the call is answered, number of customer complaints). There is an obvious need for research to demonstrate that TQM applies equally to services and manufacturing, and that is has the potential to drive the same change seen in the manufacturing industries of sophisticated economies.

Considering the lack of empirically-based service quality studies, especially in Australia, this research focuses on examining a particular service industry and a subset of their client base. The consulting engineering industry in

International Journal of Quality & Reliability Management, Vol. 11 No. 7, 1994, pp. 60-76, © MCB University Press, 0265-671X

This research was partly funded by the Service Industries Research Programme within the (former) Department of Industry, Technology and Commerce, and is partly based on Report No. 14 of that research programme[1].

Australia is particularly interesting since, in recent years, its members have progressed into many Asian nations, markets renowned for close relationships in business. If these interests in Asian markets are to be ultimately successful, consulting engineering firms will need to be aware of their customers' needs and priorities and have the operational capability to deliver to those requirement standards.

Literature Review

The quality management movement has several leaders who have published groundbreaking works[2-6] that have established the field. Others have extended and tailored the literature to suit the needs of service industries[7]. Juran *et al.*[6, pp. 33.2-3] defines service as: "Service is work performed for someone else. The service may be provided to a consumer (e.g. hair cutting), to an institution (e.g. computer leasing), or to both e.g (energy services). Service work exists because it can outperform the clients in meeting their own needs", or performing duties the clients are incapable of doing at all. A service is further defined as "where a tangible good is not produced (e.g. non-manufacturing), and a service as a transaction where a tangible good is not served". Service quality, according to Juran *et al.*[6, p. 33.6], is the same as for product quality: "fitness for use". The customer should be the arbirator of what the use is and, subsequently, the fitness. The customer would determine what aspects of the service is most beneficial, rather than the service provider dictating these aspects. For example, the overriding aspects of service in the airline industry may be safety and promptness. This article will report on what the consulting engineering firms and their clients believe are the more important aspects in their transactions.

The intangible nature of services has obstructed the advancement of the field of service quality. Whereas manufactured products are amenable to sampling, gauging and measurement of various types, services are less so. Measures have tended to be far more elusive, and so perception of service quality has tended to be more prevalent as a quality scale. This measurement problem requires much more research work as it will need to be resolved soon in light of the advent of the post-industrial age, as envisioned by Jaikumar[8] where manufacturing firms will be far more involved in the provision of downstream services to reinforce the product package. Some manufacturing enterprises do much more than transform the raw materials to a finished good, but embrace the downstream activities of distribution, maintenance, marketing and consultancy services. Simply, the provision of services is becoming more widespread and not merely restricted to traditional suppliers. Consequently, expansion of knowledge of service quality provision should be a research priority.

Perceptions form the basis for a conceptual model created by Parasuraman *et al.*[9] and further developed in Zeithaml *et al.*[10] and Parasuraman *et al.*[11]. The gaps between the perceptions of the clients and service providers in terms of expectations and perceived results on a bevy of criteria constitute

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

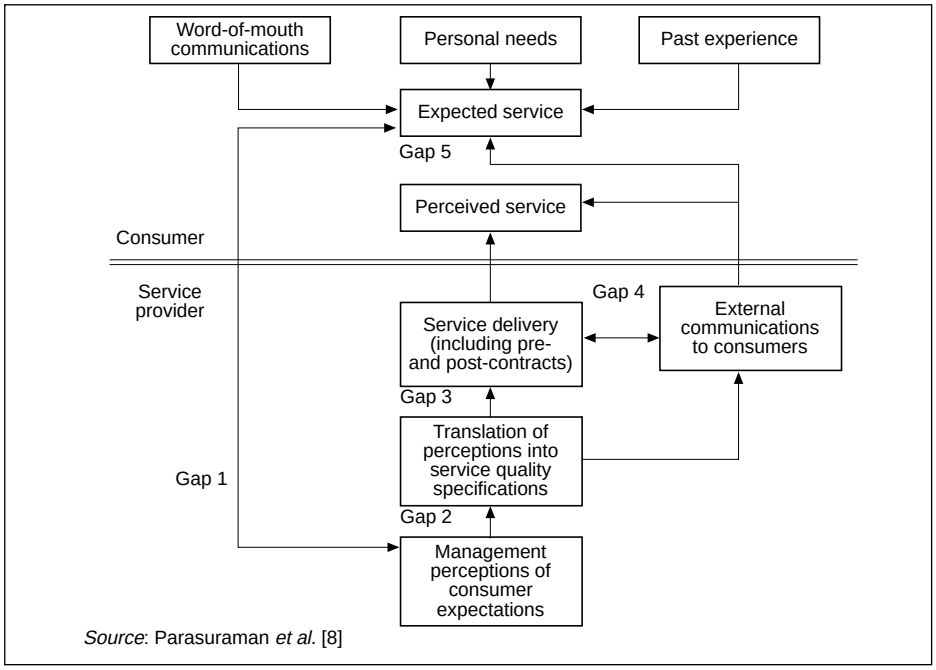

Figure 1.
Service Quality Model

the Parasuraman *et al.*[9] model (see Figure 1). This service quality model measures five gaps in perceptions, including gaps within the service provider, within the client and between each party. The five gaps are:

- Gap 1. Customers' expectations minus management perceptions gap.
- Gap 2. Management's perceptions minus service quality specifications gap.
- Gap 3. Service quality specifications minus service delivery gap.
- Gap 4. Service delivery minus external communications gap.
- Gap 5. Expected service delivery minus perceived service delivery.

Parasuraman *et al.*[9] developed ten determinants of service quality, namely access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles and understanding/knowing the customer. These ten service quality determinants were collapsed into five dimensions, as follows (the original dimensions are shown in parentheses):

(1) Tangibles.

(2) Reliability.

(3) Responsiveness.

(4) Assurance (competence, courtesy, credibility, security).

(5) Empathy (access, communication, understanding the customer).

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

In order to measure these dimensions and therefore the gaps in perception, a survey instrument known as SERVQUAL was created. The 22 items on this device related to each of the five dimensions above. Nel and Pitt[12] have used this research vehicle to effect in the retail sector, in five "hyperstores" of a large British retail group. Although this methodology does have inherent problems, it still has both descriptive power and the ability to generate insight and understanding for managers.

Research Methodology

This research project was conducted as part of the Service Industries Programme[1] administered jointly between the Australian Coalition of Service Industries and the (then) Commonwealth Department of Industry, Technology and Commerce. The broad objective of this part of the programme was to improve the understanding of the characteristics, structure and performance of Australia's service sector. The consulting engineering industry was chosen as a subject of investigation since it met several criteria established by the research team:

- prior experience with typical service providers;
- a clearly defined and bounded industry;
- a clearly identifiable, distinct client base;
- applicability of the conceptual model of analysis to the industry.

The research had the following major objectives: to measure client expectations and perceptions of the service quality provided by consulting engineers; to determine the relative importance of the features which constitute service quality (from the perspective of perceived value to the client); to ascertain the extent to which consulting engineering firms understand and meet these expectations; and to explore the ways in which consulting engineering firms are able to identify and exploit opportunities to improve their service in an increasingly competitive industry.

In fulfilling these objectives, it was hoped the study would further serve to promote greater understanding of service quality issues in this industry, direct attention to the organizational shortfalls that impact service quality, identify issues which affect the client/consultant relationship, offer a framework that can be used to manage better for service-based competitiveness in the consulting engineering industry, and finally, provide methods and ideas which can be extrapolated and adapted to other industries.

The conceptual model of analysis was the Parasuraman *et al.*[9] gap model, described earlier. The SERVQUAL survey was amended substantially to accommodate the characteristics of the industry and overcome some of the model's deficiencies. Preliminary interviews were held with consulting engineers and members of the two client groups identified as likely participants, architects and local government engineers. These interviews and a pilot sample of the survey conducted with 40 principals of consulting

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

engineering firms assisted in further refining the survey device. The final survey device had 33 items which related to six service features. The 33 statements are detailed in Table I.

The service features and their definitions as seen by the respondents are:

- Tangibles (statements 1 to 5) – the appearance of communication materials and products, e.g. detailed and accurate documents; use of appropriate materials and equipment.
- Assurance (statements 6 to 11) – experienced, technically expert and readily available principals and staff who are able to maintain client confidentiality.
- Reliability (statements 12 to 16) – the ability to perform the promised service dependably and accurately in terms of time, cost and quality.
- Empathy (statements 17 to 20) – personalized attention by principals and staff, who understand the industry and parameters within which their clients operate.
- Communication (statements 21 to 26) – clear and regular communication with clients throughout the job, on issues such as scheduling, staffing, problems, client expectations.
- Client focus (statements 27 to 33) – extra dimensions which emphasize close client focus, e.g. post-job reviews, creativity, initiative, customization.

In terms of the conceptual Parsuraman gap Model (Figure 1), it was decided to limit the formal analysis to gaps one and five since gaps two, three and four related to issues that are internal to the service supplier and involve organizational culture, better explored using a case study method. However, the principals' and engineers' survey did include several short answer questions to address some of these internal service quality issues.

Both the clients' survey and the principals' and engineers' surveys had the 33 statements pertaining to expectations in the six service features. The principals were asked to provide certain company data and strategic planning information. The clients were also asked to indicate how they perceived the engineering firm dealt with most frequently met the 33 items of service quality.

The data gathering exercise was conducted by post. The client survey was sent to readily identifiable consulting engineering client sectors, architects and local government engineers. Client participants were selected from directory lists of architectural firms and local government offices. Of the 320 surveys sent, 107 completed, usable questionnaires were received (33 per cent response rate). The consulting engineers survey was sent to all the member firms of the Association of Consulting Engineers of Australia (ACEA), in all Australian states. The ACEA is the respresentative body for consulting engineering firms in Australia. Its membership comprises firms with a

1. Produce detailed and accurate documents and drawings
2. Ensure documentation is easily understood by clients and that it represents what the client will receive
3. Ensure materials and equipment are commissioned and operate within the design parameters
4. Use computerized systems and software which are compatible with those of their client, for direct information transfer
5. Provide clients with a detailed programme, which is based on realistic expectations and shows how deadlines will be administered
6. Commence and complete jobs on the scheduled dates
7. Properly administer jobs through daily vigilance and regular progress reviews
8. Co-ordinate the various engineering disciplines, to bring all within the agreed budget
9. Allocate sufficient resources (including back-up resources) to ensure good quality, timely work
10. Apply established quality control procedures to detect and eliminate errors rapidly
11. Respond promptly to client requests for information
12. Have qualified and experienced staff who have technical expertise, and who instil confidence
13. Have staff with good conceptual skills, which enable them to contribute proactively to the design process
14. Maintain complete client confidentiality
15. Ensure personnel assigned to jobs are readily accessible to clients
16. Be aware of, and conform to, requisite regulations, e.g. standards and codes
17. Give personalized service
18. Have a good understanding of the industry and/or circumstances (political, financial etc.) in which their client operates
19. Be sensitive to, and incorporate, specific client needs
20. Display genuine interest in, and enthusiasm for, the work done for their client
21. Have contract administrators with strong communication and interpersonal skills
22. Explain at the outset exactly how jobs will be administered and what the client can expect from the firm
23. Ensure, by communicating with clients at the pre-design stage, that briefs are sufficiently detailed, and accurately reflect the client's needs
24. Inform clients of personnel assigned to the various tasks and report any significant staffing changes
25. Identify and define problems and their cost implications to clients as soon as they are encountered
26. Ensure their staff are able to communicate in a “non-technical” way with clients, who may not Be conversant with a particular discipline
27. Conduct post-project reviews to assess their service quality, to determine the level of client satisfaction, and to ascertain where improvements can be made
28. Have a multi-disciplinary approach, offering clients a broader array of services, which are better co-ordinated through in-house communication
29. Offer “elegant” design solutions and options, which reflect refinement and resolution of inconsistencies
30. Be creative and progressive in making new products and services available to existing clients
31. Display initiative, i.e. go beyond what has been requested; anticipate issues of concern to the client, and introduce new ideas, rather than reprocessing information provided by the client
32. Provide products and services which are customized for individual clients, rather than using a standardized format, i.e. display greater flexibility
33. Constantly improve their products, services and technical capabilities, and keep informed of new developments in their industry

Table I.
Thirty-three Statements from Survey Device

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

majority Australian interest in the firm. Membership in the ACEA is not mandatory.

A professional engineer must have a qualification recognized by the Institution of Engineers, Australia, (IEAust), usually a four-year degree from a recognized tertiary institution. A professional engineer is bound by a code of ethics and regulatory standards. Consulting engineering firms employ professional engineers to offer services in engineering skills and knowledge. Firms usually work on a project to project basis but repeat clients are common. Usually smaller firms specialize in a single engineering discipline (e.g. structural, civil, mechanical, electrical, industrial) whereas the larger firms offer multi-disciplinary services. According to Australian Bureau of Statistics (ABS) data, at the end of June 1988 the consulting engineering sector comprised 3,096 enterprises, employing 17,445 people, and generating sales turnover of $1,141 million and a net operating surplus of $132 million. The operation detail by enterprise size may be seen in Figure 2.

A survey was sent to a principal and a more junior engineer, selected at random, in each ACEA member firm. Nineteen per cent of principals and 12 per cent of engineers responded, representing 71 consultancies. The breakdown of the disciplines of participating engineering firms appears in Figure 3.

Firm sizes ranged from sole proprietorships to 1,300 employee enterprises, with a mean of 54 people and a median of ten people. Therefore, the vast majority of respondents were smaller organizations. The reported firm earnings for the 1990-1991 finanical year ranged from $45,000 to $105 million, with the estimated average revenue generated per employee being $77,454. Twenty-four per cent of firms reported some of these earnings were derived from the export of their services, the average contribution being 16 per cent.

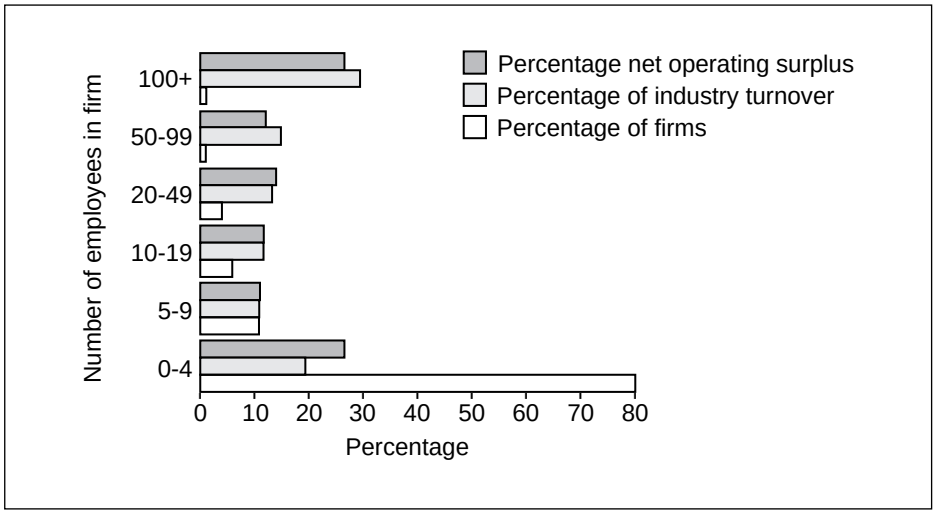

Figure 2.
Consulting Engineering Operations by Firm Size

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

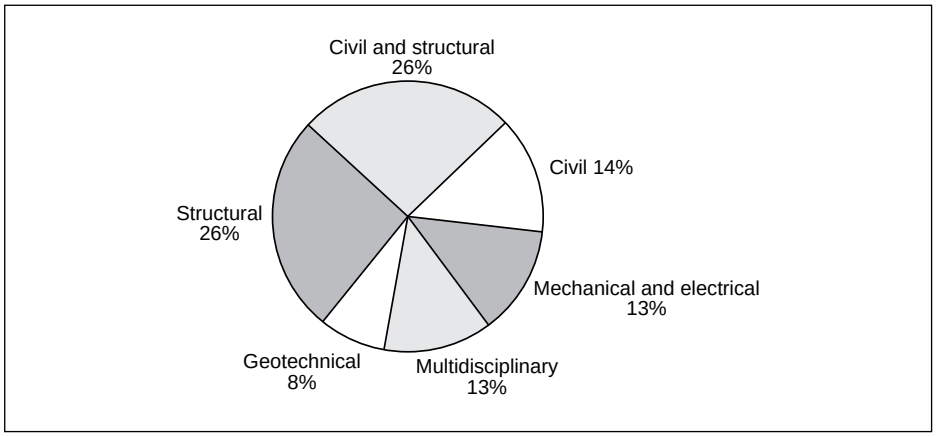

Figure 3.
Participating Firms by Discipline

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Discussion of Results

An essential aspect of managing for service quality is the identification of client expectations and, as part of the survey, clients completed the 33 statements (see Table I) related to their expectations of consulting engineering firms. In the survey of consulting engineering firms, principals and engineers also filled out the same set of statements about client expectations. To understand the relationship between the client's expectations of service quality and the service provider's perceptions of the client's expecations of service quality, we look to Gap 1 of the Parasuraman gap model of service quality. The responses to the 33 statements relating to the service features were measured using a five-point Likert scale where 5 represented strong agreement and 1 represented strong disagreement. Gaps were measured by finding the difference between these responses, resulting in a possible range from –4, indicating a massive shortfall, to +4, indicating a great degree of exceeding expectation.

Gap 1 Discussion

Consider Table II where the extent of the differences for Gap 1 between the consulting engineering firms' principals and their clients are listed at the service feature level. Gap 1 is defined as the principals' perceptions of client expectations minus the clients' expectations. Simply, this is a measure of how well the service provider knows what his customers expect. It stands to reason that a service provider will have great difficulty in meeting customer needs if there is confusion over what the clients' expecations are. The features identified as significant are tangibles, communication and client focus. The others are too close to zero to be of interest and random error is the likely source of these differences.

Tangibles, communications and client focus are features that lift an ordinary, perhaps adequate firm to one that delivers quality service. Again, however, service quality only really occurs when the client is satisfied, and the

Service feature	Principals	Architects	Gap 1
Gap 1: Extents for consulting engineering principals with architects as clients (n =55)			
Tangibles	3.87	4.37	–0.50
Reliability	4.24	4.64	–0.40
Assurance	4.37	4.62	–0.25
Empathy	4.36	4.40	–0.04
Communication	3.83	4.36	–0.53
Client focus	3.46	4.03	–0.57
Gap 1: Extents for consulting engineering principals with local government engineers as clients (n = 37)			
Tangibles	3.92	4.37	–0.44
Reliability	4.21	4.33	–0.13
Assurance	4.29	4.41	–0.12
Empathy	4.32	4.13	–0.19
Communication	3.86	4.24	–0.37
Client focus	3.51	3.79	–0.28

Table II.
Gap 1 by Client Segmentation

disparity indicates that the service quality needs of clients are not being fully identified. In addition, the gap between architects' expectations and principals' perceptions of their expectations is consistently larger than that of the local government client group. Architects diverge significantly on four of the six factors (tangibles, reliability, communication and client focus), whereas local government engineers differ significantly on two only (tangibles, communication).

There may be two plausible reasons for this. First, local government engineers could be considered to have lower expectations of service quality than architects. This could ensue from pressure to cut costs and a history and reputation of a low cost focus and adequacy in service rather than excellence. Second, the disparity could result from the fact that architects and consulting engineers are different professional groups that have undergone different education and training. Local government engineers on the other hand are the same profession as the consulting engineer (service provider) and likely to be in similar engineering disciplines. The items on which architects differ include those mentioned above plus the issue of reliability, perhaps highlighting one of the competitive pressures to which architects are subjected: accurate and efficient project management and scheduling.

The principals of the consulting engineering firms were compared with the client groups since they have the vast majority of contact with the clients. When the engineers', principals' and clients' responses were ranked and

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

compared, interestingly there seemed to be reasonable agreement. The dimensions where there are differences however are of more concern. It is interesting that there is more agreement between the clients and the engineers with the principals being out of step, on several dimensions. These items concern operational and contact matters (communicative documentation and identification, definition and notification of problems). For instance, "Ensure documents are understood by clients and represent what they will receive" is ranked third by clients, fifth by engineers and not at all in the top ten by principals, and "Early identification, definition and notification of problems" is seen by clients as important (equal second), the engineers place it sixth and the pricipals, tenth. This is likely to reflect the fact that the actual tasks are undertaken by the junior engineers in the firm and they possess a higher awareness of the practicalities of project execution.

Clients were asked to list distinctive competences of the consulting engineering firms and the results showed a wide disparity between the architects and local government engineers (LGEs). The five most cited distinctive competences for each group are listed in Table III.

It is interesting to note that local government engineers (LGE) are far more likely to regard expertise as an attractive distinctive competency than their architect counterparts. This could be because architects see expertise as a "given" necessity. This can be related to Hill's[13] discussion of "order-winning criteria" and "qualifying criteria". Qualifying criteria are considered attributes that merely equip a company to play the game, whereas order-winning criteria are distinctive capabilities that allow a firm to beat its competitors in winning an order. These ideas are directly applicable in this research; local government engineers considered expertise highly, perhaps an order-winning criterion for them, whereas architects considered it merely qualifying criterion. "Price competition" and "work to budget" were items that LGEs regard far more important than architects.

Architects regarded service and reliability more highly in a consulting engineering firm than did LGEs. This could possibly indicate a higher degree of professionalism or simply that LGEs were trading these against some other

Architects		Local government engineers	
Compentency	Frequency	Competency	Frequency
Service	12	Expertise	21
Reliability	10	Local knowledge	10
Familiarity	7	Price competitiveness	8
Experience	6	Experience	8
Innovation	5	Multi-disciplinary firm	7

Table III.
Five Most Cited Competences, by Client Group

priorities such as price. Architects did not regard multi-disciplinary firms as highly as LGEs. This could be because architects are far more focused in their endeavours than are LGEs. Another reason for this could lie in the fact that architects are far more practised project managers and managers of the tendering process and are more likely to utilize this manner of working, than LGEs.

Gap 5 Discussion

Gap 5 measures how effectively the service provided compares with the service expected. It is defined as the difference between the client perception of the service delivered and the client expectation of the service. If this gap is zero or positive, the client's expectations have been matched or exceeded. However if the gap is negative, there is a service delivery shortfall in the eyes of the client. Table IV shows that Gap 5 calculated at the service feature level for each client group is consistently negative, indicating either some dissatisfaction with the delivery of the service or higher expectations than were realistic. The largest difference in Table IV is that of reliability where a score of –1.27 was found for the architects and –1.02 for the LGEs, quite a large difference considering the scale upon which these are calculated, described earlier in this section. On this scale, the reliability score does appear to be significant, and considering that this was ranked as the number one service feature in terms of importance by the clients as a whole, there seems to be a problem of some note here. Also tangibles, which is the second most

Service feature	Perceptions	Expectations	Gap 5 score
*Measurement of Gap 5 for architects (*n = *41)*			
Tangibles	3.40	4.37	–0.92
Reliability	3.37	4.64	–1.27
Assurance	3.97	4.62	–0.65
Empathy	3.93	4.40	–0.47
Communication	3.39	4.36	–0.97
Client focus	3.10	4.03	–0.92
*Measurement of Gap 5 for local government engineers (*n = *68)*			
Tangibles	3.48	4.37	–0.89
Reliability	3.32	4.33	–1.02
Assurance	4.04	4.41	–0.37
Empathy	3.87	4.13	–0.26
Communication	3.50	4.24	–0.74
Client focus	3.06	3.79	–0.73

Table IV.
Gap 5 by Client Group

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

important feature, has a significant gap as well: –0.92 for architects and –0.89 for LGEs. In addition, there are two other features that have gaps of magnitude greater than or equal to –0.80, which indicates there is a shortfall in service quality delivery.

Another possibility is that the expectations are too high with respect to what the consulting engineering firms are capable of delivering. This would imply that the service supply firms should be the standard setters for service quality expectations whereas in virtually every other industry, the customers' needs, desires and requirements are the drivers of quality. We can think of no reason as to why this industry should be such an exception.

Across all of the features, the LGEs have smaller Gap 5 scores which indicates that they are more satisfied generally than the architects. This could be for several reasons: closer professional affinity, lower standards/ expecations, or different delivery standards of the firms which service LGEs. This smaller gap for LGEs is seen across all six service quality features. Notably, as before there are larger differences, both positive and negative, in these features for individual clients but this fact is hidden through the averaging process. The smallest Gap 5 score is for assurance and empathy, which may well represent the professional affinity that LGE's experience with consulting engineers. Empathy, defined earlier, comprises personalized attention and understanding of industry constraints and characteristics, important in local government work.

It is interesting to note that while clients, principals and engineers all agree that "Detailed and accurate documentation" is the most important of the 33 statements on the survey, the clients regarded this as eighth in the ranking of perceived delivery dimensions. In other words, while all parties to the consulting engineering service transaction agree on the importance of this service parameter, clients believe that consulting engineers are significantly lacking in performance. In addition, "prompt response to requests for information" was ranked second and third by principals and engineers respectively in order of importance but was the ninth best delivered dimension according to the clients. These and other rankings' disparities suggest that the best delivered service dimensions, as perceived by clients, are those that fall in the assurance service dimension and this is reflected in the smaller Gap 5 scores for both client groups in this area. However, there is a shortfall in other areas such as tangibles and reliability. Elements of reliability are those pertaining to issues of project administration, timeliness and management and not surprisingly, architects found there was a gap of –1.27 between what they were expecting and what they believe was delivered. Considering the role architects typically play in the architect-engineer relationship, that is the role of project manager, they would be more likely to expect more (4.64) than LGEs (4.33).

Table V contains the most frequently cited of the client's greatest sources of dissatisfaction with the consulting engineering firms. It is evident that these clients focus on different matters. Clearly, "failure to meet deadlines" is of primary concern to both groups but following that, their grievances diverge.

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Generally, it seems that architects seem unhappy with the service aspects that collectively could be classed as "personal". Local government engineers on the other hand dwell on the more "technical" issues.

When asked in which areas they experienced problems in delivery service, the principals of the consulting engineering firms cited, in descending order of frequency; meeting deadlines (11); accommodating client changes to the scope of work (11); obtaining clear, detailed and firm information regarding requirements (7); service quality compromised by low fees (7); insufficient time to provide proper service level (7); resourcing difficulties due to time demands (6); poor quality and delayed information from sub-consultants (5); clients inability to understand fully the role of consulting engineers (5); impossible and/or unrealistic programmes (5); staff are unable to work to deadlines consistently (4); and maintaining a sufficiently high level of communication with clients (4). This list shows the frequency of response to questions on service delivery problems. The principals of consulting engineering firms cited difficulty associated with meeting deadlines and accommodating scope changes. From informal discussion we suspect that these elements may well be related. The above list clearly shows the dilemma of the professional service provider and indeed of the project manager which is managing the tradeoffs and constraints associated with time, service quality and cost factors. These are the three classic elements of performance in project management and of consulting engineering performance.

It is clear that maintaining a close relationship between the service provider and the client would reduce some of the gaps betwen expectations and delivered services. This would particularly be the case with respect to factors such as maintaining "a sufficiently high level of communication with clients", "poor quality in delayed information from sub-consultants", "client inability to understand fully the role of consulting engineers", and "impossible and/or unrealistic programme". The difficulty of managing cost, quality and time still remains. However if the tradeoffs can be well understood by both clients and service provider, then expectations about deadlines and budgets and standards can be mutually agreed and hopefully expectations and service provided can be realistically brought together.

Main concerns of architects		Main concerns of local government engineers	
Failure to meet deadlines	13	Failure to meet deadlines	12
Poor co-ordination of services	9	Inaccurate documentation	11
Inflexible, narrow attitudes	8	Failure to address brief requirements	8
Lack of personalized service	7	Inadequate communication	8
Inadequate communication	6	Lack of attention to detail	7
Lack of innovation	6	Unrealistic cost estimates	6

Table V.
Ranked Sources of Client Dissatisfaction

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

Key Findings and Recommendations

This study clearly identifies a "communication" problem between the consulting engineers and their clients. There are gaps between what the client expects and what the consulting engineers believe the clients expect, and between what the client expects and what they perceive is delivered. This "communication" problem may be interpreted in several different ways. First, it may be a matter of unrealistic client expecations of the available services. This implies that realistic, factual pictures of consulting engineering services are not being portrayed and presented to the clients effectively and consequently unreal anticipation of what can be delivered. Second, it is a matter of the consulting engineering firms not listening to the desires of the clients. Clearly, service providers' misinterpretation of the client expecations was a source of problems. This was borne out in the difference between clients and engineers in the ranking of importance of distinct service features.

There was also a gap encountered between the principals and the engineers. This is a disparity which relates to Gaps 2 and 3 within the Parasuraman model but was not included in this study. Gaps 2 and 3 pertain to the internal problems within the service provider. Gap 2 is the difference between the management's perceptions of client expectations and the translation of perceptions into service quality specifications. Gap 3 is the difference between the service quality specifications and the service delivery. Negative gaps for these items reflect lack of management commitment to service quality and lack of perception of task feasibility. The disparity of the study seems to be causing problems and inconsistencies between these management levels on a range of issues. Considering it is the principals who begin the relationship with the client on behalf of the engineering firm, a difference with the junior engineers in the knowledge of the firm's capabilities is likely to result in pledges that may be unsustainable. If there are differences between what engineers believe the client wants and between what the engineer regards as important and what they believe they do well, it is hardly surprising that there is a difference between what the client expects and the service the client believes is delivered. This is the main proposition of Parasuraman *et al.*[8], that the previous gaps and shortcomings affect the final delivery performance in satisfying the clients' needs, that is Gap 5 of the model. Hence, by addressing the previous shortcomings, the final customer satisfaction gap should be able to be narrowed.

This research has shown to be effective in assessing the service quality of a particular client-provider relationship. The shortcomings were able to be pinpointed by gauging the different gaps within the model and comparing the various service feature responses from the clients and engineers. This enabled inferences to be made about the different client groups also, which would turn out to be invaluable for firms found to be lacking in this area. Our research could be extended in several ways. The three gaps not evaluated in this study could be determined in further work in order to gain insights into the

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

organizational causes of any shortcomings or surpluses in service quality. This would, of course, result in a far larger survey which would likely reduce the response rate.

The case approach could be utilized to examine specific provider-client relationships where the respondents could answer the questionnaire with respect to a particular client or a particular engineering firm. This would result in analysis which could pinpoint actual troubles in the relationship, whether the obstacles lie in the discussions of the project scope and objectives, in over-promising specifications, in under-communicating internally within the consulting engineering firm, in under-delivering on promises, in under-valuing particular service feature aspects of the contract or some other source of problems. A study of this type could then assess, along with personal interviews, the other gaps (2, 3 and 4) in the Parasuraman model.

From a managerial perspective, it would be useful for firms themselves to undertake some analysis of their provision of service quality by gauging clients' perceptions and expectations of past transactions. The results of such investigation could surely assist in, first, assessing how well the firm currently performs, and second, target aspects of the client-engineer relationship where improvement may be made. Better still, the ACEA, the consulting engineers' professional body, could undertake or commission a study which examines particular client-engineer relationships, rather than aggregate results. The ACEA would be more likely to engender the co-operation needed to accomplish a rigorous study.

As seen in manufacturing industries, management commitment to change to providing quality service must be seen and believed by other members of the firm. The principals of firms must be committed to the change and see the ensuring benefits of further satisfying clients in the service and in the perception that they are endeavouring to improve. Such change, especially earlier on, can allow a firm to gain advantage in the market where they are differentiated from their competitors which have not progressed up the quality curve.

In order to bridge the gaps between the service providers and clients, more detailed discussion regarding what the client needs and how the engineering firm goes about providing the services need to take place during the early contract formulation. The data reveal that this happens to a large extent already but that in 31 per cent of cases, the agreement was informal or verbal, 26 per cent of agreements were incorporated into written documents or contracts, and 20 per cent of agreements were a combination of both. If more of these agreements were formally recorded, obligations on both sides would be more clearly known. Also, it would be important that these documents detailing the delivery agreements be provided and communicated to the engineers actually performing the work, since there were differences of opinion between the principals and the engineers who actually would be "closer to the action", who currently have little client interaction early on. This

would enable the misunderstanding of the client expectations to be narrowed also. Generally, a heightened awareness of service process issues on both sides of a contract would lead to improvements in matching service delivery to expectations. This should be able to be achieved somewhat through implementing the previous recommendation.

The limitation found with the Parasuraman model is that for any useful information to be gained, the survey device needs to be heavily amended where the statements reflect industry issues and characteristics. This requires considerable industry knowledge, usually gained through interviews with industry representatives and participants and time investment in piloting draft surveys. This, of course, results in a survey instrument which is not applicable across industry boundaries.

Conclusions

Although the model used to explain quality in service relationships needed to be modified and adapted for use in our particular industry context, it clearly was able to provide insights about the gaps between client expectations of service quality and service provider standards.

In the context of the design and related services provided by consulting engineers to architects and local government engineers, there were substantial gaps between clients' service expectations and service provider management perceptions of those expectations. These gaps were generally larger for the architect client group than the government engineer clients.

The methods employed in this research are able to produce insights in addition to identifying gaps in the context of a service model. Clearly, to the extent that service quality is important in the choice behaviour of clients, gaining an understanding of existing industry gaps and improving a firm's performance of those subsets of service quality that are valued by clients is a matter of competitive advantage for service providers.

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

References

1. Ramsay, L., Samson, D.A. and Parker, R.P., "Quality-based Competitiveness of Service-Sector Organizations: Application to Australian Consulting Engineering Firms", *Service Industries Research Program Report No. 14*, Australian Government Publishing Service, Canberra, 1993.
2. Deming, W.E., *Quality Productivity and Competitive Position*, MIT, MA, 1982.
3. Garvin, D.A., "Competing on the Eight Dimensions of Quality", *Harvard Business Review*, November-December, 1987, pp. 101-9.
4. Crosby, P.B., *Quality is Free*, McGraw-Hill, New York, NY, 1979.
5. Crosby, P.B., *Quality Without Tears*, McGraw-Hill, New York, NY, 1985.
6. Juran, J.M. and Gryna, F.M. (Eds), *Juran's Quality Control Handbook*, 4th ed., McGraw-Hill, New York, NY, 1988.
7. Albrecht, K. and Bradford, L.J., *The Service Advantage: How to Identify and Fulfil Customer Needs*, Dow Jones-Irwin, Homewood, IL, 1990.

8. Jaikumar, R., "Postindustrial Manufacturing", *Harvard Business Review*, November-December, 1986, pp. 69-76.
9. Parasuraman, A., Zeithaml, V. and Berry, L.L., "A Conceptual Model of Service Quality and Its Implications for Future Research", *Journal of Marketing*, Vol. 49, Autumn, 1985, pp. 41-50.
10. Zeithaml, V., Parasuraman, A. and Berry, L.L., *Delivering Quality Service: Balancing Customer Perceptions and Expectations*, The Free Press, New York, NY, 1990.
11. Parasuraman, A., Berry, L.L. and Zeithaml, V.A., "Understanding Customer Expectations of Service", *Sloan Management Review*, Spring, 1991, pp. 39-48.
12. Nel, D. and Pitt, L., "Service Quality in a Retail Environment: Closing the Gaps", *Journal of General Management*, Vol. 18 No. 3, 1993, pp. 37-56.
13. Hill, T., *Manufacturing Strategy: Text and Cases*, Irwin, Homewood, IL, 1989.

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)

This article has been cited by:

1. Perry John Forsythe School of the Built Environment, University of Technology Sydney, Sydney, Australia . 2016. Construction service quality and satisfaction for a targeted housing customer. *Engineering, Construction and Architectural Management* **23**:3, 323-348. [Abstract] [Full Text] [PDF]
2. Anthony W.Y. Lai, W.M. Lai. 2013. Users' satisfaction survey on building maintenance in public housing. *Engineering, Construction and Architectural Management* **20**:4, 420-440. [CrossRef]
3. Frederic Marimon ViadiuFacultad de Ciencias Económicas y Sociales, Universidad Internacional de Catalunya, Barcelona, Spain Eduard Cristóbal FransiUniversidad de Lleida, Lleida, Spain. 2005. A study of the ISO 9000 certification process: consultant profiles and company behaviour. *Managing Service Quality: An International Journal* **15**:3, 290-305. [Abstract] [Full Text] [PDF]
4. Shams-ur RahmanInstitute of Transport Studies, School of Business, University of Sydney, Sydney, Australia. 2002. Leadership and HR focus in TQM research in Australia: an assessment and agenda. *Benchmarking: An International Journal* **9**:5, 485-505. [Abstract] [Full Text] [PDF]
5. Martí CasadesúsDepartament d'Organització, Sestio Empresarial i D. Producte, Universitat de Girona, Girona, Spain Frederic Mariron ViadiuUniversitat International de Catalunya, Barcelona, Spain Iñ´aki Heras SaizarbitoriaDepartamento Organizacion de Empresas, Universidad del Pais Vasco, San Sebastian, Spain. 2002. Quality service of ISO 9000 consultants. *International Journal of Quality & Reliability Management* **19**:8/9, 998-1013. [Abstract] [Full Text] [PDF]
6. Ismail SilaFinance and Management Science, College of Commerce, University of Saskatchewan, Saskatoon, Canada Maling EbrahimpourRoger Williams University, Gabelli School of Business, One Old Ferry Road, Bristol, RI, USA. 2002. An investigation of the total quality management survey based research published between 1989 and 2000. *International Journal of Quality & Reliability Management* **19**:7, 902-970. [Abstract] [Full Text] [PDF]
7. Frederic Marimon Viadiu, Martí Casadesús Fa, Iñaki Heras Saizarbitoria. 2002. Do quality consultants offer a quality service?. *Total Quality Management* **13**:6, 797-811. [CrossRef]
8. Shams-Ur Rahman. 2002. A review of empirical research on Total Quality Management using scale developing methods: An Australian perspective. *Total Quality Management* **13**:5, 635-649. [CrossRef]
9. Ka-Shing Woo. 1998. Developing a Scale for Measuring Service Quality Perceptions in Distance Education. *Journal of Customer Service in Marketing & Management* **4**:4, 31-45. [CrossRef]
10. Danny SamsonMelbourne Business School, University of Melbourne, Carlton, Australia. 1997. Progress in total quality management: evidence from Australasia. *International Journal of Quality Science* **2**:4, 214-235. [Abstract] [Full Text] [PDF]
11. Hamed A. Al-SaggafSaudi Consolidated Electric Company in the Eastern Province, Dammam, Saudi Arabia. 1997. Application of TQM at SCECO-EAST: a case study. *Journal of Quality in Maintenance Engineering* **3**:1, 40-54. [Abstract] [Full Text] [PDF]
12. Paul HerbigProfessor at the Marketing Department, Graduate School of International Trade and Business Administration, Texas A&M International University, Laredo, Texas, USA Alain GenestreProfessor at the Marketing Department, Graduate School of International Trade and Business Administration, Texas A&M International University, Laredo, Texas, USA. 1996. An examination of the cross-cultural differences in service quality: the example of Mexico and the USA. *Journal of Consumer Marketing* **13**:3, 43-53. [Abstract] [Full Text] [PDF]

Downloaded by Indiana University Bloomington At 17:08 07 March 2017 (PT)