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Evaluating service quality in universities: a service department perspective

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Abstract

Purpose – The purpose of the study is to report on an in-depth exploration of service quality in an Information Technology service department in a Higher Education Institute (HEI) and to evaluate the instrument used.

Design/methodology/approach – The study surveys customers using the SERVQUAL instrument, which is one of the most widely used and applied scales for the measurement of perceived service quality.

Findings – A focused and rigorous examination of customers' views of the importance of the service elements is provided. The study confirmed previous research that the application of SERVQUAL in the public sector can produce different service quality dimensions from those found in private sector services. It was also found that the service quality gaps, and the relative importance of the five dimensions of service quality, were the same for students and staff, albeit with some specific differences. Reliability was the most important dimension for all customers and the greatest improvement in service quality would be achieved through improved service reliability.

Practical implications – The implications of these findings for the department are discussed, together with the value of SERVQUAL to the public sector, in general, and Higher Education, in particular, in assisting with improvement of services. Further research at the HEI which would benefit the department is identified as well as a broader project to survey service provision and approaches to quality measurement across HEIs.

Originality/value – In an increasingly consumerist environment, a serious approach to service quality can only enhance the reputation of HEIs which address the area in a coherent and consistent manner. This study details a useful approach.

Keywords Universities, Communication technologies, Service levels, Quality, SERVQUAL, United Kingdom

Paper type Research paper

Introduction and purpose

The UK higher education (HE) environment has undergone significant changes in recent years, many of which are externally driven. The expectations of customers are increasing, and there is greater emphasis placed on quality of service. Quality management in HE has many problems and as customer groups become more fragmented, pleasing the customer becomes more difficult (Orwig and Jauch, 1999). There are many areas where service levels that were thought acceptable a few years ago, are now not tolerated (Donnelly and Shiu, 1999). Many of the changes within HE are student-centric, and students and their parents are becoming much more aware of "value for money". Information technology (IT) departments are not immune from this, being under increasing pressure to provide quality services. There is external pressure

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from students through an increase in consumerism, and from academic departments who want to be assured that they are receiving value for money. There is also internal pressure to ensure the provision of quality services that is motivated by a desire to reduce the costs of dealing with the consequences of poor services. For example, reducing management time spent dealing with complaints and justifying service levels to senior management, and reducing time spent by front-line staff rectifying mistakes. This paper reports on an evaluation of service quality within a university Computing Services (CS) department.

Service quality within the university sector

There are many definitions and concepts of service quality in the literature, and it is difficult to reach a consensus on the definition. From their research, Brysland and Curry (2001, p. 391) conclude, "from the perspectives of different authors that it is about providing something intangible in a way that pleases the consumer and that preferably gives some value to that consumer". A general definition is "the totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs" (Johnson and Winchell, 1988, p. 48).

Service quality is important to all organisations as it is "regarded as a driver of corporate marketing and financial performance" (Buttle, 1996, p. 8). It has also been put forward as a critical determinant of competitiveness (Lewis, 1989), and a source of lasting competitive advantage through service differentiation (Moore, 1987). More particularly, service quality affects the re-purchase intentions of customers (Ghobadian *et al.*, 1994). More people hear about poor customer service experience than good customer service, and negative word of mouth can have a devastating effect on an organisation's efforts to attract new customers. Customers who have experienced poor service will reveal their experience to other people, and therefore this is likely to lead to a reduction in potential customers (Horovitz, 1990). While public sector customers may not have the choices available in the private sector, poor service can still have a negative effect on reputation.

However, the pressures to improve service quality may arise from different sources. Rather than pressure to compete, it may arise from internal pressure due to the desire of managers to improve service quality or, externally through an increase in consumerism.

Poor service quality may not affect the re-purchase intentions of CS's customers, because the customers have no alternative IT service provider. However, there are other possible associated costs: low staff morale may lead to high staff turnover and absenteeism; there may be difficulties in recruiting high quality staff; and too much staff time may be devoted to dealing with disaffected customers (Stuart and Tax (1996)). Another possible result of delivering poor quality services is that CS develops a reputation for not caring about its customers. This could be difficult to change and may also affect the university's overall reputation with the community at large, including funding bodies and employers (Srikanthan and Dalrymple, 2003). Service quality is thus as important for public sector organisations as private sector organisations. (Donnelly *et al.*, 1995).

Choice of research method: why SERVQUAL?

The starting point for service quality is measurement and analysis (Edvardsen *et al.*, 1994). There is a need for service quality models to enable management to identify high

quality and to determine where problems exist, and it has been argued that attempts to improve quality management are being prevented because of the lack of instruments designed to measure quality (Farrell *et al.*, 1991). It is also important to measure service quality to identify quality related problems, to allow for comparison before and after a service change, and to establish standards of service delivery (Brysland and Curry, 2001).

Many service quality models have been proposed (Moore, 1987; Heywood-Farmer, 1988; Beddowes *et al.*, 1988; Nash, 1988; Philip and Hazlett, 1997; Robledo, 2001). Of all the models, the most enduringly popular, widely cited and best researched method of assessing service quality is SERVQUAL (Asubonteng *et al.*, 1996; Robinson, 1999; Waugh, 2002) developed by Parasuraman *et al.* (1985, 1988). Thus an advantage of using SERVQUAL is that "it is a tried and tested instrument which can be used comparatively for benchmarking purposes" (Brysland and Curry, 2001, p. 389). The scale that is the focus of SERQUAL is perceived quality, which is a customer's judgement about the excellence of a service (Zeithaml, 1987).

Parasuraman *et al.* (1985) identified ten determinants of service quality, namely, accessibility, reliability, responsiveness, competence, courtesy, communication, credibility, security, understanding the customer, and tangibles (for example physical facilities). The ten determinants were condensed into five dimensions (tangibles, reliability, responsiveness, assurance and empathy) when Parasuraman *et al.* (1988) developed the SERVQUAL model to measure customer perceptions of service. The definitions of the dimensions are as follows:

- *Tangibles*. Appearance of physical facilities, equipment, personnel and communication materials.
- *Reliability*. Ability to perform the promised service dependably and accurately.
- *Responsiveness*. Willingness to help customers and provide prompt service.
- *Assurance*. Knowledge and courtesy of employees and their ability to convey trust and confidence.
- *Empathy*. Caring, individualised attention the organisation provides to its customers.

SERVQUAL uses a scale to rate service expectations and performance by asking customers a set of questions on attributes that reflect the five dimensions of quality. This model places emphasis on the views of customers in defining service quality. Parasuraman *et al.* (1988, p. 30) stated that SERVQUAL had been designed to be "applicable across a broad spectrum of services" and the format could be adapted to fit specific needs, and that it would be most valuable when used to track service quality trends periodically. They proposed that the SERVQUAL model could be extended to measure gaps in quality and could therefore be used as a diagnostic tool to enable management to identify service quality shortfalls. The gap score is calculated by the perception statements being deducted from the expectation statements. If any gap scores turn out to be positive then this implies that expectations are actually being exceeded. This allows service managers to review whether they need to re-deploy resources to areas of under performance (Wisniewski, 2001). This could be particularly important in a public sector organisation where budgets are under great pressure.

Parasuraman *et al.* (1991) report that SERVQUAL is a useful starting point for investigating service quality and state that SERVQUAL can usefully be supplemented

with additional research to uncover problems causing gap scores. Wisniewski (2001) suggests that SERVQUAL's questionnaire design, employing empirical psychometric testing and trials, means that it can be applied across a broad range of service organisations.

Research questions

Brysland and Curry (2001) concluded that the literature clearly supported the use of SERVQUAL in the public sector. So for example, there have been a number of studies applying SERVQUAL to healthcare that report the successful application and reliability of the scale (Youseff *et al.*, 1996; Sewell, 1997; Pagouni, 1997, Curry and Stark, 2000). SERVQUAL has also been used successfully in HE research, although these have been limited to Library Services (Broady-Preston and Preston, 1999), undergraduate academic teaching (Hill, 1995) and administration (Galloway, 1998). To date, SERVQUAL has not been used to research service quality in University IT services.

Also, some research has added a note of caution to SERVQUAL's use in the public sector. One study (Orwig *et al.*, 1997) concluded that service quality may be perceived differently in the public sector. More specifically, Finn and Lamb (1991) found that although the scale was reliable, the service quality dimensions identified in the public sector research did not match well with the five dimensions identified by the SERVQUAL model (Parasuraman *et al.*, 1988). Babakus and Boller (1994, p.266) also suggest that dimensionality of service quality "may be a function of the type of service under investigation"

Given the general support for the SERVQUAL measure, plus the concern over how service quality dimensions are perceived in the public sector, this paper does not specifically seek to "test" the measure per se. Rather it seeks to identify if the measure operates in the same way in IT services within a University as it does in other contexts. Hence the following research question:

Do the five SERVQUAL dimensions of service quality apply in the context of IT services within a university setting?

Improvements in service quality come about by understanding customers and their requirements, and basing the services on the needs of those customers (Orwig *et al.*, 1997). In the public sector defining the customer can sometimes be difficult.(Brysland and Curry, 2001). For example, it is possible that not all university members use the IT services in the same way.

The customers of the University are becoming more complex because of the increasing number of external influences, For the IT services provided by CS, two critically important customer groups exist; namely, staff and students. As such it is important for CS to understand whether these two groups differ in their perceptions of the service quality provided by IT. It is important because such an investigation can identify different needs of these two customer groups that could in turn lead to changes that improve service quality. The extant SERVQUAL based literature has already identified a number of broad areas where differences between consumer groups and their experience of service quality may occur. Hence the following research questions are deemed to be of interest:

Do staff and students perceive service quality dimensions in relation to IT services within a university setting in the same way?
Is the relative importance of each of the five dimensions of service quality the same for staff and students?

The literature also highlights that a critical element of satisfaction with a service is the extent to which the expectations of a service compares to the perception of the service delivered. The difference being the service quality gap and the size of the gap will determine overall assessment of service quality (Parasuraman *et al.*, 1988). Given the need to satisfy two important customer groups, a further research question is posed:

Are service quality gaps and their magnitude the same for staff and students within the university, IT services context?

Methodology

Given the extent of testing that has been carried out on the SERVQUAL instrument in both the public and private sectors there is much academic support for using it in its entirety as much as possible. While minor modifications in the wording of items to adapt them to a specific setting are appropriate, deletion of items could affect the integrity of the scale (Parasuraman *et al.*, 1991). As established in other applications (Donnelly and Shiu, 1999; Curry and Sinclair, 2002; Brysland and Curry, 2001) the SERVQUAL instrument was examined by the authors and via a pilot study (Bell and Opie, 2002) using staff and students to establish if any modifications or adaptations were prima facie required to enable it to be used successfully to measure service quality of a University IT department.

No modifications were deemed necessary as a result of the pilot study and the questionnaire used was based on the 22 items designed to measure the five dimensions of service quality as defined by Parasuraman *et al.* (1985). (See Appendix for a summary /overview of the questionnaire)

As SERVQUAL is hypothesized to have a five-dimensional structure (Parasuraman *et al.*, 1991, 1988) the same structure and methodology which produced it was used for this research. Thus a pre-determined five-factor analysis (using the well established factor analysis with varimax rotation approach) was performed on the student and staff data set. By constraining the analysis to five factors the results could be directly compared with other researchers in the area including Parasuraman *et al.*'s (1991) results (see for example Table I). This allows for the comparative benchmarking of IT

Weight scores	Staff Importance weighting	SD	Student Importance weighting	SD	*p*
Tangibles	12.5	8.1	15.0	9.3	0.084
Reliability	34.9	16.3	26.8	12.6	0.320
Responsiveness	21.1	7.2	22.0	7.9	0.028
Assurance	19.0	7.7	20.3	9.0	0.920
Empathy	13.4	6.2	15.9	6.9	0.760

Note: *p* values are calculated using a Mann-Whitney test with the null hypothesis that there is no difference between staff and students

Table I.
A comparison of SERVQUAL importance weightings with service quality dimension for students and staff

services against other services to gauge relative performance standard- a theme returned to in the discussion section later.

The SERVQUAL data was then analysed to calculate student and staff expectations, perceptions, and the perception minus expectation gap scores for each dimension. To compare student and staff results to see if they were significantly different the Mann-Whitney test was used. This test is a widely used significance test for comparing the differences between two independent samples; in this case, staff and students. In particular the test allowed for comparisons to be made of the expectations, perceptions, gap scores, and importance weightings between staff and students.

Finally, as the extant literature has identified that the five dimensions of service quality are not of equal importance in differing contexts (Parasuraman *et al.*, 1991) there was a need to "tailor" this research to its University/IT context. Thus an additional section of the questionnaire asked respondents to rate the relative importance of each of the five dimensions by assigning 100 points between them (Parasuraman *et al.*, 1991). The most important dimension was to be given the highest number of points and the least important, the smallest number. Total points allocated were to add up to 100. This allowed the relative importance of each of the five dimensions to be identified and also allowed a comparison of the importance of service quality dimensions between staff and students.

The sample comprised 314 usable student and 152 staff responses (a 2.2 per cent and 6.2 per cent response rate respectively). The data analysis used weighted means based on the known percentages of staff and students in different departments. This ensured the sample reflected the known staff and student departmental profiles within the University and was not biased by under or over-representation from some departments' students or staff.

Findings and analysis

The dimensions of service quality

The factor analysis was performed on the service quality expectations of staff and students and the results are shown in Table II

Factor analysis is used to show the underlying (latent) structure of a data set. Given the five dimension profile that is supported by previous SERVQUAL research, it was predicted that such analysis would also conform to this profile. The actual results of the factor analysis do not fully support this prediction.

Firstly, the percentage variance explained by the five factors in the expectations (E) data sets for staff and students were 76 per cent and 75 per cent respectively – a very acceptable result. However, the general pattern of loading shown in Table II reveals a four factor/dimension profile of service quality for both students and staff. Within these four dimensions there are some similarities with and some differences between staff and students. The Tangibles dimension loads on a distinct factor (F3) for both groups. Reliability also appears as a similar, discrete dimension (loading mainly on F2) for both staff and students. Empathy too seems a discrete dimension of service quality though it is a clearer dimension for students than for staff (where it splits across two factors). This splitting of dimensions across several factors has been reported previously (Parasuraman *et al.*, 1991, 1994), and may be a consequence of a priori extracting of five factors when the dimensions could be captured by less factors.

	Factor loadings				
	F1	F2	F3	F4	F5
Staff expectations					
Tangibles					
E1			0.67		
E2			0.78		
E3			0.71		
E4			0.64		
Reliability					
E5		0.87			
E6		0.76			
E7					
E8		0.91			
E9					
Responsiveness					
E10	0.62				
E11	0.72				
E12	0.71				
E13				0.64	
Assurance					
E14	0.80				
E15	0.78				
E16	0.62				
E17	0.62				
Empathy					
E18					
E19				0.73	
E20					0.77
E21					0.66
E22					
Student expectations					
Tangibles					
E1			0.74		
E2			0.82		
E3			0.67		
E4			0.69		
Reliability					
E5		0.80			
E6		0.68			
E7					
E8		0.84			
E9					
Responsiveness					
E10				0.61	
E11				0.65	
E12				0.67	
E13					
Assurance					
E14	0.66				
E15	0.68				
E16	0.71				
E17	0.64				

Table II.
Factor loading matrices following forced five factor solution for staff and student expectations

(*continued*)

	Factor loadings				
	F1	F2	F3	F4	F5
Empathy					
E18	0.79				
E19					
E20	0.82				
E21	0.77				
E22	0.77				

Note: The percentage variance explained by the five factors in the expectations (E) for staff and students were 76 per cent and 75 per cent respectively. Loadings less that 0.6 have been omitted

Table II.

The other interesting finding from the factor analysis was that for staff and students two service quality dimensions conflated into one factor. This indicates that for the staff and student groups they are viewed as a single dimension not two separate ones. Also interesting is that they are not the same two dimensions that conflate. For staff, Responsiveness and Assurance load strongly into a single factor (F1). For the students it is Assurance and Empathy that loads strongly into a single factor (F1).

Parasuraman *et al.* (1991) have hypothesised this may imply that one factor is the antecedent for another. So, for students, Empathy could be an antecedent of Assurance suggesting that, IT services need to demonstrate that they care about students if the antecedent for trust in those IT staff is to be perceived. For the academic staff group, Responsiveness might be an antecedent of Assurance suggesting that, IT staff need to provide a prompt service for staff (i.e. Responsiveness) for IT staff's knowledge and trust to be appreciated (i.e. Assurance).

Student and staff results

The student and staff results are provided in Tables I and III. What follows is, firstly, a summary of the important findings from these Tables for staff and students separately. Then a comparison of the two groups is provided.

Student results. Starting with student *expectations*, these are high for all five dimensions of service quality with means ranging from 5.34 for Tangibles to 6.32 for Assurance (on a 7 point scale where 1 is low, 7 is high and 4 is the mid point).

The student *perception* scores are all lower than the expectation scores. So, for example, the poorest perception is of service Reliability, followed closely by Tangibles dimensions (4.60 and 4.65 respectively). The perception of Assurance is the highest for students.

Given that the perception scores were lower than expectations all gap scores were negative indicating a shortfall in meeting students' expectations across all dimensions (Table III). The greatest gap score between expectation and perceived level of service is in the Reliability dimension (a -1.52 gap score).

Given that Reliability is the largest service gap, it is worrying for IT services that this is also the students' most *important* service dimension with a weighting of 26.8 per cent, (see (Table I). Also, the second most important dimension for students, Responsiveness (22 per cent weighting), is the second largest service quality gap. This "matching" of importance ranking and size of gap is constant for students. The more important service dimension, the bigger the perceived gap in the service provided.

	Expectations					Perceptions					Gap scores		
	Staff		Student			Staff		Student			Staff	Student	
	Mean	SD	Mean	SD	p	Mean	SD	Mean	SD	p			p
Tangibles	5.27	1.52	5.34	1.48	0.343	*4.53*	*1.32*	*4.65*	*1.31*	*0.002* *	*− 0.74*	*− 0.69*	*0.001* *
Reliability	6.15	1.25	6.10	1.22	0.180	4.63	1.66	4.60	1.61	0.257	− 1.52	− 1.51	0.154
Responsiveness	6.14	1.09	6.13	1.10	0.630	4.72	1.65	4.72	1.58	0.223	− 1.43	− 1.41	0.975
Assurance	*6.38*	*0.93*	*6.32*	*0.89*	*0.004* *	5.08	1.55	5.02	1.57	0.455	− 1.29	− 1.29	0.343
Empathy	*6.08*	*1.12*	*6.05*	*1.02*	*0.009* *	4.85	1.61	4.79	1.50	0.549	− 1.23	− 1.27	0.452

Notes: *Significant to <1 per cent; italicised areas indicate where significant differences occur; overall weighted SERVQUAL score: 1.3; p values are calculated using a Mann-Whitney test with the null hypothesis that there is no difference between staff and students

Table III.
A comparison of SERVQUAL expectations, perceptions and gap scores with service quality dimension for students and staff

Staff results. Staff expectations are broadly similar to student expectations in terms of ranked importance of dimensions. Staff expectations are also similarly high on all five dimensions of service quality with means ranging from a mean score of 5.27 for Tangibles to 6.38 for Assurance (again on a 7 point scale with 4 as the mid point).

As with the students, staff *perception* scores are all lower than the expectation scores. So, for example, the poorest perception is of service Tangibles, followed closely by Reliability (4.53 and 4.63 respectively).

Given the shortfall between expectations and perceived service provided, all *gap* scores for the staff were negative indicating a shortfall in meeting staff expectations across all dimensions.

The reliability dimension which, at -1.52 has the largest service gap, is also the most important dimension for staff with a weighting of 34.9 per cent, followed by responsiveness (21 per cent) and assurance (19 per cent) with the other two dimensions, empathy and tangibles, at 13.4 per cent and 12.5 per cent respectively. As with the students, it is clear that there is a "match" between staff ranking of dimension importance and the service gap between expectations and perceived delivered service quality. The more important that the service dimension is for staff, the bigger the perceived gap in the service quality provided.

Comparison of staff-student results. As mentioned previously, the Mann-Whitney test was used to compare student and staff expectations, perceptions and gap scores to see if they are significantly different (Table III).

There is a significant difference ($p < 0.01$) between the data for staff and student expectations for the assurance and empathy dimensions, perceptions for the tangibles dimension and gap score for the tangibles dimension. Staff have a significantly greater expectation score than students for assurance and empathy, students have a significantly greater perception score for tangibles, and there is a significantly greater gap score for staff tangibles.

The Mann-Whitney test was also used to compare student and staff importance weightings. Table III summarises the results. There is no significant difference between the data for staff and student assessments of the importance weighting.

Conclusions/research questions

Having reported on and analysed the findings it is now possible to return to the research questions posed by the literature and attempt to answer them.

Research Question 1: Do the five SERVQUAL dimensions of service quality apply in the context of IT services within a university setting?

Factor analysis was used on the staff and student SERVQUAL based data set and as the findings section has discussed, this did not produce a five dimension profile as predicted by the prior research of Parasuraman *et al.*, (1991). However, the pattern observed in this study is consistent with some prior studies performed in the public sector (Donnelly and Dalrymple, 1996; Donnelly and Shiu, 1999). The factor analysis' lack of fit to the a priori SERVQUAL dimensions suggests a somewhat different perception of service quality in IT services. Thus the factor analysis shows some dimensions that are the same as the SERVQUAL dimensions (e.g. Tangibles and Reliability). It also identifies dimensions that are amalgams of the SERVQUAL dimensions. So for staff, items of Responsiveness and Assurance load together. For

students Assurance and Empathy items form a single factor/dimension. Hence, the answer to the research question posed is that the service quality dimensions are similar but not exactly the same when applied in the context of a University's IT service. (with some dimensions being antecedents of other dimensions). As previous SERVQUAL research has shown differences in the dimensionality of service quality this is, in retrospect, unsurprising.

Research Question 2: Do staff and students perceive service quality dimensions in relation to IT services within a university setting in the same way?

Table III provides a comparison of the SERVQUAL expectation and perception scores across all dimensions. In testing the null hypothesis that there is no difference between staff and students, the analysis revealed that there is in fact a significant difference ($p < 0.01$) between the data for staff and student expectations for the Assurance and Empathy dimensions. Similarly staff and student perceptions for the Tangibles dimension differ significantly as do their gap scores for the Tangibles dimension. Staff have a significantly greater expectation score than students for Assurance and Empathy, students have a significantly greater perception score for Tangibles. Thus, although for the majority of the data there is no significant difference between staff and students expectations of, and perceptions of, the service provided, some differences between staff and students' expectations and perception of the service quality provided do exist.

Research Question 3: Is the relative importance of each of the five dimensions of service quality the same for staff and students?

The findings of the importance weighting analysis confirms that for both staff and students, Reliability is the most important dimension of service quality in IT services followed by Responsiveness, Assurance, Empathy and then Tangibles. Moreover, there is no significant difference between the two groups on the perceived importance of these dimensions. So the answer to Research Question 3 is an unequivocal "yes".

Research Question 4: Are service quality gaps and their magnitude the same for staff and students?

An overall weighted SERVQUAL score of -1.3 was calculated (see Table III), and all gap scores were negative across all dimensions for students and staff. The perception scores for both staff and students show that the University's IT service is performing poorest on the Reliability and Tangibles dimensions, and the greatest gap score is in the Reliability dimension. Thus there is a clear similarity between staff and students in terms of the overall pattern of service quality gaps.

However, there is one significant difference between staff and students in terms of the magnitude of the gap on the Tangibles dimension ($p < 0.001$). Given that this is the only significant difference and that Tangibles are the least important of the dimensions, it is reasonable to conclude that the service quality gaps are the same and the magnitude of these gaps are mainly the same also.

Discussion and recommendations for CS

The study has identified and suggested reasons why there are some differences in the structure of service quality dimensions in this part of the public sector. It has also identified specific areas where gaps exist between expected and perceived service

quality. In addition the research shows which of these dimensions are most important and thus where gaps in service quality are most critical. In particular, the service quality gaps obtained from this study should help to inform future service developments and improvements, and should form the basis of ongoing monitoring. To derive an ongoing benefit CS should conduct SERVQUAL surveys each year (Brysland and Curry, 2001):

- to allow yearly comparisons;
- to determine how service improvements have affected customers' perceptions and expectations of the service over time; and
- to determine the effectiveness of service development and improvement initiatives in targeted dimensions.

The exploratory research reported in this study offers several insights concerning CS's customers' perceptions of service quality. Specifically, the SERVQUAL results have identified service quality gaps in all dimensions, and even though it was found that students and staff demonstrate some small but significant differences in the results, service improvement efforts can be focused and applied in the same areas to create the greatest improvement for all customers.

The results clearly show that the focus of efforts to improve service should be in the Reliability dimension. This is where the service appears to be performing poorest and is also regarded as the most important element of the service by all customers.

A review by Asubonteng *et al.* (1996) suggested that the five dimensions of service quality measured by SERVQUAL are likely to be industry specific. Parasuraman *et al.* (1988) reported that in the private sector customers mostly want Reliability. Zeithaml *et al.* (1990) explained that customers were consistent in ranking the service quality attributes; Reliability was usually the most important dimension and Tangibles the least important. This study also observed that Reliability is the most important dimension, and is as such consistent with previous studies performed in the public sector (Donnelly and Shiu, 1999; Donnelly *et al.*, 1995; Brysland and Curry, 2001).

The introduction of service-monitoring processes, for example trend analysis and complaints systems could be used to develop a continuous system of gathering and analysing information to identify in which specific service areas Reliability issues are to be found. CS should also examine the publicised service levels in the Service Level Agreement (SLA) and ensure that the promised target times for service Reliability are achievable and understood by customers. The service standards in the SLA may need to be re-defined if the targets are not realistically achievable. A focus of effort in this area should benefit CS in the long run because increased Reliability should result in a reduction in management time spent dealing with complaints and justifying service levels to senior management. However, it is important not to rush into redefining business processes to improve service quality, but to concentrate on a continual slow effort (Iacobucci *et al.*, 1994).

Service quality gap scores were found to be negative in all dimensions of service, with high perception scores in all areas being matched with even higher expectations. In some cases these may have been unrealistically high. The idea that excellent service quality means that customers expectations should be met or exceeded, depends on whether or not the expectations are reasonable (Brysland and Curry, 2001).

Camillieri and O'Callaghan (1998, p128) have stated, "if expectations are set too high, then perceptions are significantly lower than expected for most, if not all, aspects of the service". Brysland and Curry (2001) emphasise that it is important to have a formal contract between customers and service providers. CS already have this in place with the SLA, although this may need to be modified. The SLA helps CS to manage customer expectations. It aids in the design of service specifications, which helps to ensure that services are customer-focused, and informs customers regarding CS provision.

Expectations can be shaped through marketing and external communication (Ghobadian *et al.*, 1994; and Robledo, 2001). CS should communicate more with customers, and establish a partnership to develop better relationships. Customers will then become more aware of what services, and service levels, can be achieved within the restraints of available resources. This should foster mutual trust between customers and CS, providing best value for money and targeted services. Also, CS should ensure that they share all research results from surveys including the data analysis, and plan targeted improvements by consulting customers, this will ensure services meet customers expectations. These methods of working with customers should foster a long term relationship built on mutual trust. However, it must be borne in mind that the main obstacle to developing long term relationships is that student customers are more transitory than staff customers. CS may need to develop different means of working with the changing student group and the more permanent staff group.

The overall weighted SERVQUAL gap score has been seen to be a minus figure of −1.3 for students and staff (Table II) indicating an overall shortfall in meeting customers' expectations of the service. However, the gap scores compare favourably with gap scores reported from previous studies performed in the public sector. For example, Donnelly and Shiu (1999) reported an overall weighted SERVQUAL gap score of −1.4 for a UK local housing authority's housing repairs service, Brysland and Curry (2001) reported minus 1.6 for catering services and minus 1.64 for grounds maintenance services.

The results showed that students have significantly higher perception scores in the tangibles dimension than staff. This is probably because students have more contact with CS staff and equipment. Staff is unlikely to use the computer laboratories unless they teach a computer based course. Even though students are likely to own their own computers for use in their accommodation, the majority use the computer laboratories when on campus. Also, when staff need IT advice they are likely to contact their departmental IT staff, but when students need help and advice they will probably visit CS helpdesk and therefore have direct contact with CS staff. The quality of equipment in the laboratories is therefore probably more important to students. This is confirmed by the comments students made. However, for both students and staff the results show that they have a preference for reliability over looks, and staff helpfulness over neat and tidy appearance.

The highest expectation score for staff and students is for the Assurance dimension. However, staff have a significantly greater expectation score than students for the Assurance and Empathy dimensions. Therefore, staff expect more individualised attention and expect CS staff to be more knowledgeable, courteous and have the ability to convey trust and confidence more than students. This is possibly because students are routinely treated *en masse* (i.e. in lectures), and are more likely to just accept what they are given. On a day to day basis staff are treated more as individuals, and have higher expectations

Positive gap scores would have enabled CS to review whether a re-deployment of resources to areas of under performance was possible (Wisniewski, 2001). The smallest gap scores were in the Tangibles dimension, followed by empathy then assurance and responsiveness.

Even though there are no positive gap scores CS could still consider reducing effort in one of these dimensions and re-directing resources to Reliability. For example reducing the amount of individual attention provided to customers by producing information that is likely to be useful to the majority of IT users in the form of leaflets and web pages, then directing customers to the information rather than CS staff spending time with individual customers.

It is possible that valuable CS staff resources are being used to provide repeatedly the same information, or explanation, to customers when one source of the information could save effort. CS staff time would then become available to work on aspects of reliability, for example, keeping appointment times and fixing faults quickly.

It is likely that CS could manage expectations for Empathy and Assurance, for example by discussing with the two customer groups the type of information required and how CS could deliver aspects of the services that are less time consuming for CS staff, whilst continuing to provide customers with a level of Assurance and Empathy.

Research limitations

Denscombe (2002, p. 126) states, "every piece of research has its limitation". The limitations of this project have been considered and are addressed below.

To ensure that the statistical analysis of a survey data is valid a sufficiently representative sample is required (Diamantopoulos and Schlegelmilch, 1997). Originally, stratified sampling was going to be used to sample staff and students from different segments of the University. However, the total population was sampled and weighted means were used in the data analysis. Weighted means are probably not as accurate as stratified sampling because the respondents can be self-selecting. Staff and students with a recent negative experience, or those with an interest in IT are more likely to respond to the questionnaire, and they may be "specialist" IT users whose views could bias the results of the survey.

Staff and students are not usually motivated to participate in surveys. Electronic means of communication were used (e-mail, on-line notice boards, web survey) to ensure that all staff and students were contacted and that the surveys were easy to return. However, this again could have biased the survey towards customers with a particular interest in, and thus greater possible expectation of, IT services.

This study used quantitative data only. Using a mixed-methodological approach would have allowed both quantitative data (surveys) and qualitative data (focus groups, interviews) to be collected and analysed. The qualitative data would have complimented the quantitative data and allowed a more in-depth analysis of the issues under consideration (Denscombe, 2002). For example, identifying where customers thought the reliability issues lie.

Individual interviews with CS's front-line staff could have been conducted to provide information and background on CS employee opinions on service quality issues. The interviews would have supplemented the SERVQUAL data, and provided an opportunity for staff to express their opinions and make comments.

Individual interviews with the Director of CS and other senior CS managers could have been conducted and this is clearly necessary if changes are to be introduced. The interviews would have been best performed after identifying service quality gaps so that the discussions could include issues relating to the specific gaps. The management's opinions of where, and how, service quality could be improved, and the benefits of doing so could have been sought. In this situation asking open-ended questions would have probably been the best approach to allow the opportunity to probe responses and allow a more accurate assessment of the interviewees opinion (Bell and Opie, 2002). However, all three groups above will have the opportunity to comment upon the research in feedback and implementation sessions

Further research

Further service quality investigations should replicate this research to confirm or deny the four dimensions of service quality identified. If the same dimension structure is found, subsequent analysis should use this "unique" four dimension structure as the locus of analysis. The importance of each dimension can then be examined more closely and accurately.

Philip and Hazlett (2001) reported that the evaluation of service quality should not be made solely on fixed-choice questions but that customers should also be provided with the opportunity to comment on all aspects of the service they received. In order to assist in the implementation of changes, focus groups of CS's staff and student customers could be set-up. Focus groups are useful for gathering ideas and insights (Churchill and Iacobucci, 2002). A small number of individuals could be brought together to discuss CS's service quality, and a moderator used to direct the discussion. The moderator would ensure that the discussion follows the outline of issues under consideration and that all views are represented. Focus groups are also useful to investigate customer perceptions of the IT services in more detail.

Ideally, a survey of other higher education institutes (HEIs) would establish how IT services are being provided elsewhere and CS could be benchmarked against other comparable institutions. The survey could also be used to gather information about the degree of pressure to provide quality services and what service quality initiatives they undertake.

Measuring quality is becoming increasingly important in HE. While league tables focus primarily on academic departments currently, the overall experience of studying and working at a HEI is rapidly becoming as prominent a feature. Quality of experience relates to the provision of all aspects of university life – from union bars, to halls and catering, to careers services as well as academic provision. This study has shown that SERVQUAL, despite some limitations, has many benefits as an effective tool in helping HE in general and CS in particular to improve the service offered to its customers, both students and staff.

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Appendix. Summary of questionnaire

The questionnaire was based on the five dimensions of service quality as defined by Parasuraman *et al.* (1985). University staff and students (both groups being customers of CS) were surveyed to assess their impressions of service performance relative to expectations. The questionnaire was produced as a web based exercise. It was completed and submitted on line.

The questionnaire was divided into sub-sections:

- Part A was designed to measure expectations of service quality from an IT service provider. This comprised 22 questions.
- Part B was designed to measure perceptions of service quality at CS. The 22 questions mirror those of Part A.
- Part C required respondents to specify the importance of the various attributes. 5 features pertaining to IT service providers and their services were listed. Respondents allocated a total of 100 points across the features. The greatest number of points was to be awarded to the feature deemed most important. The least important feature received the smallest number of points. The total had to add up to 100.
- Part D asked for personal information from the respondent regarding their studies and gender.
- Part E was an open section where respondents could add further comments or clarification.

(A seven-point Likert scale was used in both Parts A and B and a Don't Know box provided.)

A copy of the questionnaire may be obtained from the authors.

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