Exploring Graduates' Perceptions of the Quality of Higher Education

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Abstract

Over the last decade, higher education institutions in Australia have become increasingly interested in establishing quality assurance systems. According to a report published by the Higher Education council (1992 P. 6), quality is the characteristics of programs and of institutions which are valued by those whose needs the institution is seeking to meet." On the basis of the above definition, a higher education institution seeking to assess quality must first identify the institutional characteristics that are most valued by its clients and then measure the clients' perception of the institution's performance against these characteristics. Although the concept of "stakeholder" (customer focus) has been discussed in Australian quality publications (Higher Education Council 1992), little or no research has been conducted to define and model the quality of higher education. This paper reports the findings of an empirical study that developed an instrument to measure graduates perceptions of the quality of core and support services of a higher education institution. The research was carried out in a medium sized Australian university.

Background Literature

In the 1990s, some firms gained competitive advantage by providing a better product or service to the customer (Belohlav 1993). As a consequence, interest in the measurement of service quality is high. However, as highlighted by several researchers, service quality is an elusive and abstract concept that is difficult to define and measure (Bolton and Drew 1991; Glow and Vorhies 1993; Boulding, Kalra, Staelin and Zeithmal 1993). For several years, academic researchers measured service quality by employing uni-dimensional scales (Zeithmal 1988). Hjorth-Anderson (1984) argues that uni-dimensional scales are inappropriate to measure a multi-dimensional concept like quality. Recognising the pitfalls of the uni-dimensional measures of quality, Parasuraman, Zeithmal and Berry (1988) constructed a multi-item of scale perceived service quality. Galled SERVQUAL, the instrument, as claimed by its developers, assessed customers' perceptions of service quality along five dimensions: tangibles; reliability; responsiveness; assurance; and empathy. Parasuraman *et al* (1988) defined quality as the discrepancy between customers' expectations of service quality and their perceptions of the actual quality services received. Although, the multiple-item scale (SERVQUAL) was refined to be applicable across a broad spectrum of services (Zeithmal, Parasuraman and Berry 1990), the dimensionality and 'external validity' of the scale have been questioned. In July 1992, Cronin and Taylor assessed the dimensionality of SERVQUAL and found that its 5-dimension structure (as proposed by Parasuraman *et al* 1988) did not emerge in empirical examinations. They also argued that service quality dimensions differ from industry to industry and consequently, a service quality scale developed for one industry may not be valid for another. Morgan and Piercy (1992:116) offer a similar argument. They observe:

> *The attributes and dimensions of quality, as well as the types of intrinsic and extrinsic cues, are often specific to particular product/service categories and buyer types, thus generalisable models are extremely difficult to construct.*

Thus the service quality literature has left confusion as to the appropriateness of quality scales such as SERVQUAL in measuring service quality across a wide range of industries, including higher education.

The Study

Recognising the drawbacks of the SERVQUAL and other 'off the shelf' instruments of service quality, it was decided to construct a new instrument of service quality that would be grounded on dimensions or facets of quality that are suitable for higher education institutions. In April 1993, a small-scale exploratory study was undertaken to identify service quality dimensions that were considered important by students. A convenience sample of students was requested to list all the factors considered important in evaluating the quality of higher education provided by a University.[1] The responses were submitted to a qualitative cluster analysis: that is. the responses were sorted into what appeared to be homogenous categories and a definition was written for each category. The results of this exercise are shown in Table 1.

Table 1: Service Quality Dimensions

Dimension and definition	**Examples of factors considered**
Reliability: Ability to perform the service dependably and accurately	Assistance consistently provided in library to locate materials. Issue of course materials as per assigned dates.
Course: The focus is on content of courses.	Studies relevant to real world situation. Real world application of theories and thought.
Tangibles: Appearance of physical facilities and provision of appropriate equipment.	Picturesque grounds. Modern accommodation. Up-to-date equipment (for example, computers).
Lectures: The focus is on presentation and organisation of lectures	Well researched and prepared lectures.
Study Materials: Provision of appropriate study materials	Provide prior exam papers. Well structured study materials.
Responsiveness: Willingness to help students; provide prompt feedback on assignments.	Helpful administrative staff. Constructive written comments on assignments. Timely information on enrolment.
Access: Approachability and ease of contact.	More consultation with tutors. Establishment of regular consulting/office hours by lecturers.

In order to determine the importance of each of these dimensions to the students, a convenience sample of students was asked to rate the importance of each dimension along a five-place scale ranging from 'most important' to 'least important'. An importance rating was calculated by averaging the responses. For example, if for a dimension two responses were received, one with a value of five and another with one, then the average of the two values [(5+1)12] was the importance rating for that dimension. The grand mean of all the seven dimensions was used as the cut-off point for categorising a dimension as being important. In other words, the dimensions with mean value greater than the total mean of all the dimensions were considered important.

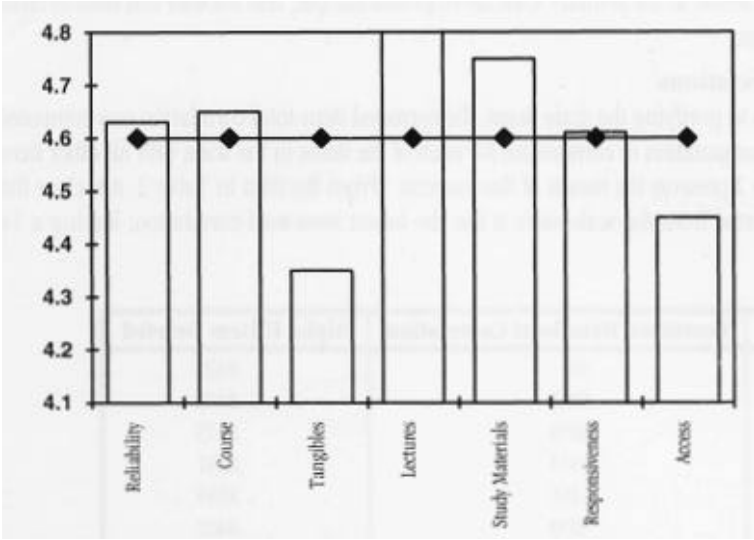
While this method may be biased in that extreme importance scores would tend to pull the grand mean toward the sample means, it provides a systematic way of identifying important dimensions.

Chart 1 provides the mean importance scores for each of the seven dimensions. The mean values of five dimensions were greater than the mean and hence were considered important.[2]

[1] Continuing students were requested to respond to an open-ended question. It is recognised that, ideally, graduates should have provided information about quality factors since the instrument was designed to tap their perceptions. However, resource constraints restricted us from obtaining information from graduates.

[2] It is recognised that multi-attribute evaluation techniques [for example, Beckwith and Lehmann (1973)] would have provided better ways of identifying salient dimensions. Again, resource constraints prevented us from doing so.

Chart 1: Mean Importance Rating for Seven Dimensions



Note: The horizontal line that cuts across the dimensions is the 'grand mean'.

Measuring Service Quality

Instrument

A series of discussions were held with senior academic and administrative staff of the University. Based on these discussions, several dimensions identified from the qualitative research were combined together, and some new dimensions were added. The result was a 15 item instrument of service quality that was presumed to tap three dimensions of quality: physical facilities, academic staff, and cognitive outcomes. A pre-test conducted among a convenience sample of students, including graduates, did not reveal any discrepancy in the 15-item measuring instrument.

As mentioned earlier, the current operation of service quality is based on 'gap theory, that is, the difference between clients' expectations about performance of a service and their assessment of the actual performance of the service. Although the literature on measuring service quality argues for simple performance based measures (for example, Cronin and Taylor 1992), the gap theory approach of measuring service quality has found wide application in industry (for example, Rigotti and Pitt 1992). Hence, the gap theory approach of measuring service quality was adopted for this study. The instrument (quality scale) used in the study had two sections. The first on 'expectations' contained 15 statements to ascertain what the students of the University would expect of services at an outstanding university. The second on 'perceptions contained a matching set of statements to measure the students assessment of the University's services. All items were anchored with a 5-point scale ranging from 5 (strongly agree) to 1 (strongly disagree).

Scale Development

Subjects: The instrument was mailed to a random sample of 1471 of the University's 1993 graduates. A total of 877 useable responses were received. The responses were split into equal groups: one group served as the primary scale development sample, and another was used to cross-validate the findings.

Item-scale Correlations

As the first step in purifying the scale items, the corrected item-total correlation was completed. This requires the computation of correlations for each of the items in the scale with all other items in the scale. Table 2 presents the results of this exercise. From the data in Table 2, it is clear that item 11 can be deleted from the scale since it has the lowest item-total correlation, leaving a 14-item instrument.

Table 2: Corrected Item Total Correlation of the Scale Items

Item	Corrected Item-total Correlation	Alpha if Item Deleted
1	.4600	.8426
2	.5047	.8403
3	.4859	.8413
4	.6553	.8331
5	.6191	.8354
6	.5070	.8402
7	.6347	.8333
8	.5967	.8353
9	.5554	.8371
10	.4274	.8447
11	.2855	.8529
12	.4118	.8450
13	.4292	.8442
14	.4842	.8420
15	.3147	.8522

Factor Analysis

The underlying dimensions of the quality scale were verified through principal component analyses of the responses. The analysis produced three factors from the 14 items: physical facilities with three items, learning outcomes with four items, and academic staff with seven items (Table 3). A varimax rotation was used.

Table 3: Varimax Rotated Factor Solution

Item	Factor 1	Factor 2	Factor 3
1	.07718	.12470	.77019
2	.08913	.11099	.78172
3	.46036	.18984	.50457
4	.74410	.08471	.23914
5	.79385	.03029	.19778
6	.72872	.17424	.07628
7	.78758	.16987	.17196
8	.82308	.07061	.07059
9	.59543	.30304	-.01570
10	.60207	.33708	-.03647
11	-	-	-
12	.17442	.74664	.01230
13	.24320	.68766	.07900
14	.17108	.63878	.21898
15	.02538	.71090	.13153

A second analysis of the same type using the validation sample confirmed the three factor solution with the factors explaining 57% of the variance.

Table 4 contains the results from the final analysis and the estimated Cronbach alpha values of the sub-scales. The alpha values ranged from 0.57 to 0.85. Although no acceptable range has been established for the reliability index, Van de Ven and Ferry (1979) have suggested that, for a scale of three items, the alpha values should fall between 0.70 to 0.90 for a narrow construct, between 0.55 and 0.70 for a moderately broad construct, and between 0.35 and 0.55 for a very broad construct. Given the fact that the dimensions used in the study are moderately broad, the reliability of the instrument can be viewed as moderate to high.[3]

[3] According to Nunnally (1978), a 7-step scale might have increased the reliability of scale items. However, since the conventional approach to measuring 'attitudes' calls for a 5-point scale, it was adopted for this study.

Table 4: Varimax Rotated Factor Patter Matrix: 14 - Item Scale

Item	Factor Loading
Factor 1: Physical Facilities. **Cronbach alpha** = 0.57	
Modern equipment	.76
Visually appealing physical facilities	.77
Comprehensive study material	.51
Factor 2: Academic staff. **Cronbach alpha** = 0.85	
Well prepared and organised	.73
Present material clearly	.77
Tell what they expect of students	.71
Concerned about student learning	.78
Provide feedback on students' progress	.80
Exercise close supervision of student work	.56
Available regularly for student consultation	.58
Factor 3: Learning outcomes. **Cronbach alpha** = 0.68	
Will enhance students' communication skills	.73
Will enhance students' capacity for problem solving	.68
Will ensure its graduates are computer literate	.65
Would provide effective bridging courses in areas such as mathematics	.69

Validity

The concurrent validity of the three facet quality scale was explored by computing a Pearson correlation coefficient between scores on the quality scale and scores on a single item measure of quality. The correlation ($r=0.2516$, $p < 0.001$) was significant. To explore the discriminant validity of the scale, scores on the quality scale were correlated with a 'satisfaction' measure obtained from the respondents regarding the University's placement services. The correlation was significant ($r=0.1$ 167, $p=0.01$), but lower than the correlation coefficient of concurrent validity. According to Churchill (1979) discriminant validity is established when the correlation between two different measures of the same variable is higher than the correlation between the measure of that variable and those of any other variable. Hence, it can be concluded that the measuring instrument used in the study exhibits the characteristics of a valid instrument.

Summary

The purpose of the study described above was to develop an instrument to measure clients perception of the quality of higher education institutions. The study used a sample of graduates of a medium size university to develop the scale. Although the reliability (internal consistency) and concurrent and discriminant validity of the scale were established, additional research is needed to fully examine the psychometric properties of the scale. For example, the 'construct' validity of the scale needs to be established. In addition, Peter, Churchill and Brown (1991) argue that measures using 'difference scores' are not as reliable as other direct measures. A study to determine the validity of the above assertion is currently in progress. To attain sustainable competitive advantage, higher education institutions need to compare their performance with their clients' expectations. The proposition that service firms which provide high quality services perform better than their competitors is supported in the literature (Betrand 1989). The instrument developed in this study could help higher education institutions measure quality and make informed decisions about strategies and tactics to improve their market position.

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