

Linking student satisfaction and service quality perceptions: the case of university education

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Introduction

Consumer satisfaction and service quality continue to attract the attention of researchers and practitioners in a wide variety of disciplines. This is not surprising, since a number of studies have shown a moderate to strong relationship between these constructs and consumer loyalty or repeat purchasing behaviour (see Taylor and Cronin (1994) for recent work in this area). In spite of hundreds of publications on consumer satisfaction and perceived quality, little work has been done to clarify the conceptual basis of these two constructs. We believe that such an effort will not only inform the average reader of the differences between these two constructs – Parasuraman *et al.* (1994) argue that the popular press does not differentiate between these two constructs – but will also clarify the causal ordering of these two variables: the literature provides conflicting views on this (see Parasuraman *et al.* (1994) and Taylor and Cronin (1994) for a discussion).

The objectives of this paper are to:

- discuss the conceptual basis of consumer satisfaction and perceived quality; and
- highlight their importance to the higher education sector.

Since a construct is usually defined by specifying its relationship with other constructs, we start by specifying the relationship between consumer satisfaction and perceived quality using a scenario specific to higher education.

The conceptual basis of the constructs

Assume that a student enrolled in one of the premier business schools in the nation is on the search for classes/subjects that would equip them with advanced marketing research techniques. The student peruses the postgraduate catalogue of the business school and comes to know of a highly relevant class that is being offered that semester. Further, assume that this class is a new addition to the business course; hence, the student has little or no opportunity to learn about the subject from other students who might have

experienced the class. However, based on the catalogue's description of the subject, the student *believes* that he/she can acquire new skills by enrolling in the class. Note that this pre-enrolment belief about the class can be described as *expectations* about the class.

It is now a well-established argument in the literature that a person learns about a concept or object and at the same time forms an attitude towards the concept (see Fishbein, 1967). An attitude can be defined as an overall evaluation of the goodness or badness of a concept or object. As applied to our student enrolment example, the student, when he/she became aware of the class, would have automatically acquired an attitude towards the class. Note that since attitude pertains to an overall evaluation of a product/service (object), it is possible (and logical) to equate one's attitude towards a product/service with one's product/service quality perceptions (an overall evaluation). Support for this argument can be gleaned from the literature (Bolton and Drew, 1991; Carman, 1990; Cronin and Taylor, 1992; Mano and Oliver, 1993; Oliver, 1980b; Taylor and Cronin, 1994).

The student enrolls in the class and finds his or her expectations negatively disconfirmed, confirmed or positively disconfirmed. Note that subjective disconfirmation is the student's judgement about the discrepancy between what he/she expected (expectations) of the class and what was obtained (perceived performance). Thus, if the student believes that performance is less than expectations, then negative disconfirmation occurs; if performance matches expectations, then negative disconfirmation arises; and if performance exceeds expectations, then positive disconfirmation occurs (see, for example, Bearden and Teel (1983), Cadotte *et al.* (1987), Oliver (1980a, 1980b) for similar arguments). It is important to note that disconfirmation can either be on a per attribute basis or "object focused". In either case, it is presumed that disconfirmation is a subjective belief as opposed to an objective judgement. In other words, it is a unique belief arising out of, or as consequence of, the student's expectations and performance beliefs, not a simple performance less expectations score.

It would be helpful to think about the construct in terms of Gestalt psychology. If expectations and performance beliefs constitute the "elements", then disconfirmation beliefs are the "whole". In other words, the meaning of the construct goes beyond its two components.

Assume that the student's expectations were negatively disconfirmed. To put it another way, the class covered only basic marketing research techniques which the student has already mastered. According to the "negativity effect" (Sears *et al.*, 1988), this negative perception should have an impact on the student's inference about the class. In other words, negative disconfirmation will result in dissatisfaction with the class. Note that (dis)satisfaction is an internal state similar to attitude but it is transaction-specific. In other words, satisfaction/dissatisfaction is the result of the evaluation of a specific transaction or consumption experience: in our "class" example, an overall evaluation of the goodness or badness of attending the class. This transaction-

specific evaluation will affect the overall attitude or, more specifically, (dis)satisfaction will weaken/strengthen the magnitude of preconsumption attitude. This distinction between attitude and consumer satisfaction is further explained in Figure 1 using terms borrowed from learning theory. Since subjective disconfirmation varies from negative, neutral to positive, and it is assumed to be bi-polar, it is postulated that subjective disconfirmation will have a direct positive impact on satisfaction. Figure 2 specifies all the hypothesized links between subjective disconfirmation and consumer satisfaction. Using our "class" example to explain the constructs, a negative disconfirmation will arouse feelings such as anger in the student. Similarly, a positive disconfirmation will arouse pleasant emotions (for example, excitement) and confirmation will create non-arousing pleasant emotions (for example, contentment). Russell and Bullock's (1985) research shows that emotions could be ordered in a bipolar scale using positive emotions on one side of the axis and negative emotions on the other side. There are two orthogonal dimensions of emotions: pleasantness and arousal. This "orthogonality" rules out the possibility of relating arousal and pleasantness in one single measure of emotion. Thus, in this research, only the pleasantness dimension is used. Given this type of reasoning, it is logical to hypothesize a positive link between subjective disconfirmation and emotions. Also, it is logical to expect a positive association between emotion and consumer satisfaction.

$S_{\text{attitude towards the class}} \rightarrow R_{\text{enrol in class}} \mid \rightarrow S_{\text{(dis)satisfaction}} \rightarrow r_{\text{attitude towards the class}}$

Note:

The symbol "I" denotes a "molar" connection between consumption experience (enrolling in class) and (dis)satisfaction. Figure 2 specifies all the "mediating mechanisms". The simplified Figure 1 is to highlight the distinction between satisfaction and attitude. The lower-case letters pertain to internal or mental events and the upper-case, overt response.

Figure 1.
Causal connection
between consumer
satisfaction and
quality perceptions

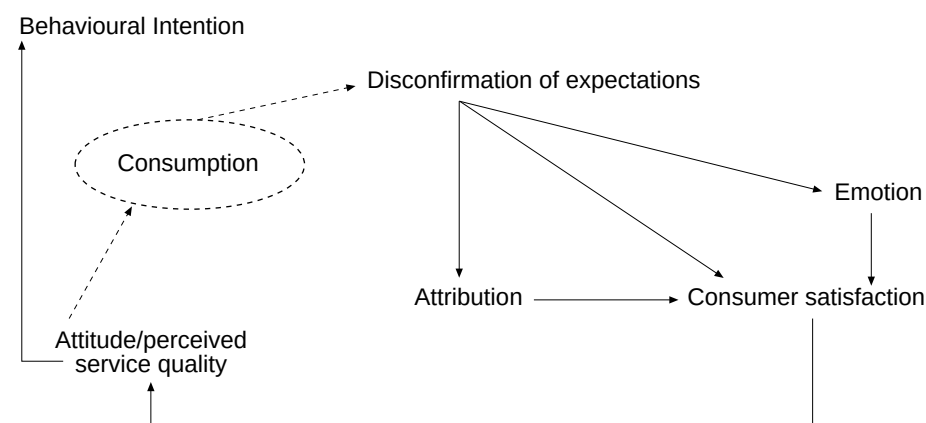


Figure 2.
A model of consumer
satisfaction and
perceived service
quality

Functional relationships:

- Consumer satisfaction = f_1 (attribution, emotion, disconfirmation)
- Attitude = f_2 (consumer satisfaction)

The case of
university
education

Figure 2 also implies that subjective disconfirmation will elicit causal inferences about service failure – attributions. Research evidence suggests that product/service failures will generally be attributed to external causes and product/service successes to internal causes (see, for example, Bernstein *et al.* (1979)). Motivation theory describes this bias as “self-serving”: that is, attributions that glorify the ego or defend self-esteem (Sears *et al.*, 1988). As applied to the “class” example, if the student perceives a negative disconfirmation, then he/she might blame the lecturer or fellow students for that student not acquiring the necessary skills (for example, the lecturer has poor knowledge of measurement theory or fellow students have a poor quantitative background with which to comprehend the mathematical aspects of conjoint analysis). On the other hand, if the student perceives a positive disconfirmation, then he/she might attribute his or her newly acquired marketing research skills to their own effort. Again, assuming a bipolar attribution (external attribution to internal attribution), a positive association between subjective disconfirmation and attribution is predicted. Also, as in the case of emotions, it is logical to expect attribution to be positively related to satisfaction. Finally, as specified in Figures 1 and 2, satisfaction will strengthen or weaken the student’s preconsumption attitude towards the class.

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Applying the model in the higher education sector

As mentioned above, consumer satisfaction is a transaction-specific, short-term, overall attitude. In the case of higher education, it would be helpful to view each class in which the student enrolls as a transaction or service encounter. In other words, a student’s overall evaluation or perceived service quality at time t will be a function of his or her satisfaction with transactions (classes) completed (attended) prior to time t ($t - 1$, $t - 2$, etc.). Rossiter (1995) argues that the functional relationship between perceived quality and satisfaction is exponential. To put it another way, (dis)satisfaction with more recent encounters will have a larger impact on perceived quality than (dis)satisfaction with previous encounters. Note that this type of reasoning demands that student satisfaction with all transactions prior to time t be measured to explain perceived quality at time t . Although this approach could offer a richer explanation of students’ attitudes towards a course/university, it would be a difficult, if not impossible, task to measure student satisfaction with all relevant classes. An easier approach would be to explain perceived quality in terms of satisfaction with a manageable set of general university characteristics.

Consider the following services and service characteristics:

- (1) emphasis on teaching students well;
- (2) availability of staff for student consultation;
- (3) library services;

- (4) computing facilities;
- (5) recreational facilities;
- (6) class sizes;
- (7) level and difficulty of subject content;
- (8) student workload.

It is possible to use these characteristics to obtain a measure of pre-enrolment or preconsumption attitude and disconfirmation. Specifically, using the multiattribute attitude modelling approach (Fishbein, 1967), the pre-enrolment attitude score of a student could be calculated as the sum of product of belief score and importance score. If one assumes a unit positive importance for each attribute, then pre-enrolment attitude would be the sum of belief scores. Similarly, a measure of disconfirmation could be obtained by asking students to state their experiences with these services/service attributes. These measures could then be used to explain satisfaction and perceived quality at time t . Note that the definition of satisfaction as a transaction-specific, short-term attitude, and the argument that the functional relationship between satisfaction and perceived quality is exponential, suggest that, depending on the time lag between measurement of "pre-enrolment attitude" and "disconfirmation", the eight-item disconfirmation measure could encompass (dis)satisfaction with i number of service encounters (where i could range from 1 to $t - 1$). However, a threat to this type of modelling is the discriminant validity of consumer satisfaction and perceived quality constructs. Figure 3 shows a model of perceived quality, abstracted from Figure 2, that can be used in higher education.

Empirical test of the model

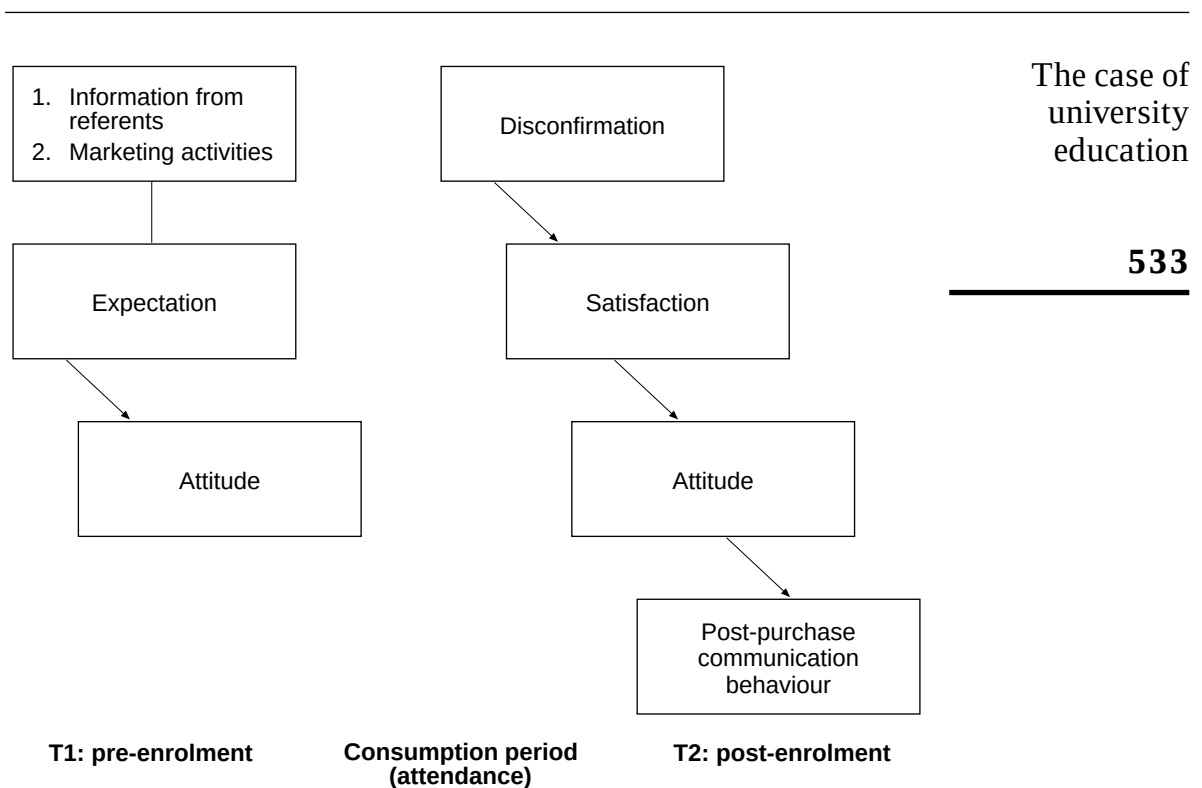
The model shown in Figure 3 was tested in a medium-sized university in Australia. The data were obtained by mail surveys conducted at two different time periods. Specifically, new enrolling students in 1993 were requested to state their expectations about the services of the university using the eight items discussed above. These respondents were contacted again in 1995 and asked to state their experiences with the eight services/service attributes. In addition, they were also requested to respond to a satisfaction scale, an affective scale and a behavioural intention measure.

Approximately, 37 per cent of the first-time respondents ($n = 1,342$) – that is, the 1993 respondents – returned the questionnaires. Data on several variables were compared between respondents and non-respondents (see Table I). Since the two groups did not differ significantly on these variables, the respondents could be considered representative of all the 1993 respondents.

Measures

The questionnaires were designed to measure:

- (1) students' beliefs about eight services and service attributes of the university;



Note: The lower-case letters pertain to internal or mental events and the upper-case, overt response

^sattitude towards the university → ^Renrol in university → ^sdisconfirmation → ^s(dis)satisfaction → ^srevised attitude towards the university → ^rbehavioural intention

Figure 3.
A model of perceived
quality for higher
education

- (2) disconfirmation perceptions using the same eight items;
- (3) satisfaction with enrolling in the university;
- (4) revised attitude towards the university; and
- (5) behavioural intention.

To obtain a measure of belief, the respondents were asked to score on a three-point scale each of the eight service/service attributes discussed above. The scale anchors were: “Less than I would expect at another university” (1); “Equal to that which I would expect at another university” (2); and “Greater than I would expect at another university” (3). In a similar manner, subjects indicated their disconfirmation beliefs with respect to each service/service characteristic on a five-point scale ranging from “Very much poorer than expected” (1) to “Very much better than expected” (5). Respondents’ satisfaction with enrolling at the university was measured with a six-item, five-point scale discussed in Oliver (1980b). He reported an α reliability of 0.82 for the scale. The revised

Table I.
Check for non-response
bias

Response	Female (%)	Male (%)
i Gender of the respondents		
Yes	38	34
No	63	66
n	788	553
Note: $\chi^2 = 2.85$, df = 1, $p > 0.09$		
ii Type of course in which enrolled		
Yes	36	30
No	64	70
n	14	91
Note: $\chi^2 = 9.55$, df = 7, $p > 0.20$		
iii Highest qualification planned for		
Yes	50	53
No	50	47
n	10	15
Note: $\chi^2 = 5.37$, df = 7, $p > 0.60$		

attitude towards the university – that is, perceived service quality at post-enrolment – was measured using an eight-item semantic differential. The bipolar scale anchors were: happy-angry, good-bad, uplifted-down, pleasant-unpleasant, contended-frustrated, fulfilled-disappointed, pleased-displeased, impressed-unimpressed. Finally, behavioural intention was obtained from the following three items with the anchors “strongly disagree” to “strongly agree”:

- (1) I like talking about _____ to my friends.
- (2) I like helping potential students by providing them with information about _____ and its courses.
- (3) People ask me for information about courses offered at _____.

All measures were an additive combination of scale items.

Analysis

Only 37 per cent of the 1,432 responses, or 496 cases, were used in the analysis. First, all measures were scrutinized for their internal consistency and dimensionality. Internal consistency was verified by computing for each scale-corrected item-total correlations and coefficient alpha. Dimensionality was verified by principal component analysis. To test the model, simple correlations were first computed between the criteria and the antecedents suggested by the model. This was followed by regressing the criteria on all suggested, standardized, exogenous and/or endogenous variables. Note that regression on standardized variables could be interpreted as path coefficients.

Results

Table II shows the internal consistency and dimensionality of the pre-enrolment belief or unit-positive importance-weighted attitude measure. Note that item 2 has a negative correlation with the total score suggesting that it has to be removed from the scale. Moreover, the coefficient alpha for the scale reveals that approximately half the variance of the measure is error variance. A further analysis of the zero-order correlations among items revealed that items 2 and 5, items 6, 7 and 8, and items 3 and 4 form somewhat distinct clusters. A principal component analysis of the correlation matrix did reveal three interpretable factors (Table II). Since the correlations among the factors were not high: $r_{12} = 0.18$, r_{13} and $r_{23} = 0.08$, items representing the three factors were treated as three different measures of “pre-enrolment” attitude. An implication of this is that disconfirmation of expectations should be partitioned into the same three factors. Table III shows the internal consistency and dimensionality of all the other variables.

Table IV shows the 9×9 correlation matrix of the variables. As mentioned earlier, disconfirmation was broken down into three separate measures to match it with the three factor belief/attitude measure. Since beliefs regarding “core service 2” (factor 3) contain a large amount of error variance (70 per cent), only the other two factors should be used to interpret the correlations. As

Table II.
Internal consistency
and dimensionality
of pre-enrolment
belief scale

Item	Corrected item-total correlation	Factor 1 (services)	Factor 2 (core service 1)	Factor 3 (core service 2)
Emphasis on teaching students well	0.21	0.13	0.34	0.49
Class sizes	−0.10	−0.36	−0.14	0.66
Level and difficulty of subject content	0.21	0.08	0.84	0.00
Student workload	0.20	0.02	0.82	0.04
Availability of staff for student consultation	0.39	0.36	0.01	0.74
Library services	0.35	0.74	0.09	0.02
Computing facilities	0.41	0.74	0.00	0.12
Recreational facilities	0.38	0.78	0.06	0.01
Note: Eigen values for factors = 2.20, 1.38 and 1.19. Factors were rotated orthogonally to obtain a simple structure. When factors were allowed to correlate, a similar pattern emerged. Highlighted loadings represent plausible measures of the factors. Alpha reliability for the eight-item scale = 0.52. Alpha reliability for factor 1 = 0.68, factor 2 = 0.56 and factor 3 = 0.30.				

Table III.
Measurement
properties of other
multi-item scales

Item	Loading with factor 1
<i>(a) Measure = satisfaction</i>	
I am satisfied with my decision to attend __	0.87
If I had to do it all over again, I would not enrol in __	0.76
My choice to enrol in __ was a wise one	0.90
I feel bad about my decision to enrol in __	0.87
I think I did the right thing when I decided to enrol in __	0.87
I am not happy that I enrolled in __	0.80
Note: Items 2, 4 and 6 were reverse coded. Eigen value for the first factor = 6.28. Alpha reliability = 0.92.	
<i>(b) Measure = post-purchase communication behaviour</i>	
I like talking about __ to my friends	0.80
I like helping potential students by providing them with information about __ and its courses	0.89
People ask me for information about courses offered at __	0.77
Note: Eigen value for the first factor = 2.02. Alpha reliability = 0.75	

	Fac. 1	Fac. 2	Fac. 3	Dis_1	Dis_2	Dis_3	Sat.	PSQ	The case of university education
Fac. 1									
Fac. 2	0.15*								537
Fac. 3	0.14	0.05							
Dis_1	-0.01	-0.01	-0.18*						
Dis_2	-0.01	-0.00	-0.02	0.13*					
Dis_3	0.06	-0.05	-0.05	0.46*	0.31*				
Sat.	0.13*	-0.08	-0.04	0.15* λ	0.27* λ	0.36			
PSQ	0.12*	-0.13*	-0.03	0.12*	0.22*	0.42	0.71* λ		
Beh.	0.08	-0.04	0.00	0.07	0.15*	0.24	0.47*	0.48* λ	

Note:
Correlations adjusted to two decimal places.
* indicates significance at $p \leq 0.035$ level.
Dis_1, Dis_2 and Dis_3 are the three disconfirmation measures discussed in the text.
 λ indicates hypothesized relationships.

Table IV.
Zero-order correlations

predicted, pre-enrolment attitude remains uncorrelated with disconfirmation. However, it is related to post-consumption or post-enrolment attitude. Similarly, disconfirmation is related to satisfaction and also varies with perceived quality. Finally, note the poor discriminant validity between satisfaction and perceived quality constructs. They are not only highly correlated with each other, but each relate almost equally well with the behavioural intention construct. In summary, given the mixed results of the correlation analysis, caution should be exercised in interpreting the structural model.

To further understand the structural relationships among the variables, a path analysis was performed. As mentioned earlier, the poor reliability of factor 3 (core service 2) makes it inappropriate or unsuitable for the analysis. Hence, only factors 1 and 2 were used in the analysis. Tables V and VI show the results.

Variable	Structural equation	R^2
z_1 : Pre-enrolment attitude pertaining to factor 1: services	—	
z_2 : Disconfirmation pertaining to factor 1	$-0.02Z_1$	0.00
z_3 : Satisfaction	$0.12Z_1^* + 0.19Z_2^{**}$	0.05
z_4 : Perceived quality	$0.04Z_1 + 0Z_2 + 0.70Z_3^{**}$	0.49
z_5 : Behaviour	$0Z_1 - 0Z_2 + 0.25Z_3^{**} + 0.30Z_4^{**}$	0.25

Note:
* $p < 0.05$
** $p < 0.00$

Table V.
Path coefficients
obtained from factor 1
and disconfirmation 1

Table VI.
Path coefficients
obtained from factor 2
and disconfirmation 2

Variable	Structural equation	R^2
z_1 : Pre-enrolment attitude pertaining to factor 2: core service 1	–	
z_2 : Disconfirmation pertaining to factor 2	$-0.03Z_1$	0.00
z_3 : Satisfaction	$-0.09Z_1 + 0.27Z_2^{**}$	0.08
z_4 : Perceived quality	$-0.07Z_1 + 0.04Z_2 + 0.69Z_3^{**}$	0.50
z_5 : Behaviour	$0.10Z_1^* - 0.03Z_2 + 0.24Z_3^{**} + 0.31Z_4^{**}$	0.27

Note:

* $p < 0.05$

** $p < 0.00$

Discussion

The results support the contention that perceived quality is a consequence of consumer satisfaction. Although it is possible that method variance is the cause of the large satisfaction effect on perceived quality, the theoretical arguments presented above suggest that perceived quality is a function of satisfaction. Unless efforts are made to measure each construct separately – for example, student satisfaction with all service encounters at appropriate time periods and perceived quality at the time of graduation – one must conclude that perceived quality depends on satisfaction.

Another observation one could make about the path analysis results is the effect of perceived quality on communication behaviour. On both the analyses – that is, using the two different pre-enrolment attitude and disconfirmation measures – the effect of perceived quality on behavioural intention is greater than that of satisfaction.

The results also suggest that pre-enrolment attitude has little or no direct effect on post-enrolment attitude. An important implication of this finding for higher education is that all service encounters should be managed to enhance consumer satisfaction. This in turn would enhance perceived quality.

Finally, note that some unhypothesized relationships have attained significance in the structural equations. Specifically, the results suggest a path from pre-enrolment attitude (factor 1) to satisfaction, and from satisfaction to behavioural intention. Note that the former path vanishes when factor 2, instead of factor 1, is used as an exogenous variable in the satisfaction equation. A plausible reason for this is the low reliability of the pre-enrolment attitude measures. In future, efforts should be made to test this path using more reliable measures of pre-enrolment attitude. As regards the link between consumer satisfaction and behavioural intention, the correlation between consumer satisfaction and perceived quality corrected for attenuation is approximately 0.90. This shows that, in future, efforts should be made to devise measures with appropriate construct validity without sacrificing the simplicity of the model given in Figure 3.

Summary and conclusion

Delivering quality service has become an important goal for most higher education institutions. Practitioners often assume that quality service is the same as consumer satisfaction. This paper is an attempt to clarify the conceptual definitions of these two variables. Perceived service quality is defined as an overall evaluation of the goodness or badness of a product or service. In other words, it is an attitude. Consumer satisfaction is similar to attitude, but it is short-term and results from an evaluation of a specific consumption experience. This exercise of clarifying the conceptual definitions of the constructs has resulted in a model of service quality and consumer satisfaction for higher education services (see Figures 2 and 3). An empirical test of the model provided in Figure 3 shows that perceived quality is an important influence on students' post-enrolment communication behaviour.

A limitation of this study is the high correlation between post-enrolment "consumer satisfaction" and "perceived quality" measures. This is not surprising, since both the constructs were measured at one point in time: i.e. post-enrolment. Moreover, according to the theoretical arguments presented earlier, (dis)satisfaction with the service encounter at time t will have a higher influence on perceived quality than (dis)satisfaction with the earlier $t - i$ service encounters. It may be possible to discriminate between the two constructs by limiting satisfaction scale items to tap (dis)satisfaction with specific service encounters. This is an area for further research.

The approach to measuring "expectations" and "disconfirmation" adopted in this research can also provide other useful information to institutional researchers. Specifically, each of the eight services/service characteristic items of the expectation and disconfirmation measures could be cross-tabulated with demographic variables such as students' gender, course of study, etc. to understand differences in perceptions, if any, among different segments of the student population.

Finally, it is hoped that this paper would stimulate more research into the antecedents and consequences of service quality. Specifically, Figure 3 should include all the variables discussed in Figure 2 and this expanded model should be tested on a high involvement service with less than two years of consumption time. An example of such a service would be an executive programme offered by a university. These programmes usually run for a month or two. Note that such a test will reduce, if not eliminate, the influences of extraneous variables on perceived post-consumption quality.

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