

Factors That Influence Student's Level of Satisfaction With Regards To Higher Educational Facilities Services

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Abstract

Educational institutions like any other organizations are realising the significance of customers in their strategic decision-making process. This paper examines students' priorities with respect to their satisfaction with facilities services offered at higher educational institutions. The undertaken survey forms a basis for measuring facilities performance within higher educational institutions. The paper starts with a review of previous work in this subject area. It provides a background theory of customer's satisfaction with regards to higher education facility services and then outlines the methodology of the study. Sampling and data collection methods are discussed, followed by the analysis. Finally, the results on students' perspectives about higher education facility services identify the most critical aspects that affect them as education clients.

Keyword: Higher Education services, customer satisfaction, facilities performance, service environment, student's experience.

1.0 INTRODUCTION

Facilities management (FM) is geared towards providing facilities services (Barrett and Baldry, 2003) and the function of facilities managers should be that of managing facilities in the best interest of the core business. These opinions present the view that there is relationship between organizational objectives or goals with facilities management function. Further, Amaratunga and Baldry (1998) proposed that the aim of facilities management should not be just to optimise the running cost of buildings but also increase the efficiency of the space management and other related assets (people and processes). Therefore, to achieve organizational mission or goal, the combination of cost and efficiency is required (Amaratunga and Baldry, 2000). Literature review in facilities management shows there is considerable agreement on the importance of FM in achieving organizational objectives in both manufacturing and service organization. FM is often foreseen as an enabler to enhance organizational resources in a competitive and efficient way.

In service organization, measuring performance is also essential to the business of the organization to ensure success. Customers have a significant impact on the performance of a business. Customers will judge and differentiate the level of service provided by an

organization compared to other organizations that offer the same product. According to the Hostmann (1997), there is a strong relation between customer satisfaction and loyalty.

For service organizations such as hotels, restaurants, financial institutions, retail stores and hospitals, the physical environment can be a powerful influence to customers' evaluation of the services given (Baker, 1987). Due to the intangible nature of services, customers rely on tangibles cues to help them evaluate service quality (Berry and Clark, 1986). In recent years, companies, including service organizations have implemented measurements of elements of customer service programs. The aim is to track customer's satisfaction over products and services offered by a particular organization. Measuring customer's satisfaction and service quality has become an industry standard in the U.S. (Horstmann, 1997). Daniels and Burn (1997) suggest that companies which strive to become a world-class should focus on the needs of the market and the customers. Furthermore, argued Wall (2003), the inseparability of production and consumption for many services requires customers to visit the facilities from which services are delivered. According to Bitner (1990), experiencing the "service factory" clearly has an impact on customer's perception of the service experience.

Higher educational institutions are increasingly recognizing that higher education is a service industry. As service organization, higher educational institutions are dealing with a same situation which places greater emphasis on meeting the expectations and needs of their customers. However, in the university environment, the concept of customer is not clearly defined (Navarro et al. 2005). There are various groups that can be categorized as customers of a university, namely students, employees, families and the society. In spite of this diversity, U.K.'s higher education has considered students to be the 'primary customers' of a university due to the commercialization of scholarship (Crawford 1991). The acknowledgement of the students' experience of an institution is regarded as an essential perspective to adopt in students satisfaction survey. According to (Douglas, Douglas et al. 2006) students opinion in the forms of satisfaction feedback is recognized in educational institution worldwide.

Furthermore, a central issue in higher educational institution is identifying the extent to which indicators within a system are used to measure facilities' performance effectiveness or efficiency. Universities have a hierarchy of management, whereby their performance is measured based on core activities such teaching, research, recruitment and, therefore, it makes the management of facilities in higher educational institutions a complex encounter. According to Belcher (1997), absolute and independent indicators of the delivery of the core business of a university, research selectivity and HEFCE quality assessment outcomes are self-selecting as primary indicators of university performance.

The primary goal of this study was to examine students' priorities with respect to facilities services offered at higher educational institutions. In this context, this study has two objectives. Firstly, to determine students' opinion on the importance factors that influences their levels of satisfaction. Secondly, to extract those factors whose nature may qualify them to be put under one of facilities management categories.

This study illustrates the linkages between FM organizational functions with higher education performance by introducing value chain concept. The result reported in this paper contributes to the development of a framework for facilities performance indicator in the service environment of higher educational institution.

2.0 THEORETICAL BACKGROUND

2.1 Service Definitions and its Characteristic

The word 'service' is multifaceted. Usually, it is expressed as something 'intangible'. According to Rachel (1966), services are behavioural rather than physical entities and have been explained as deeds, i.e. performance of effort. A service is a process or an act. Services can also be defined as a value-creating activity (Sesser et al, 1978); activities or process (Gringos, 1991); activity rather than a tangible object (Johns, 1999); any activity offered to a customer that is simultaneously consumed as it is produced (Kothari, 1998).

According to Lovelock (1983, 1991, 1994) services can be classified into three categories. Firstly, people-processing services which required customer presence, such as health care. Secondly, possession-processing services that include tasks performed on physical objects without involvement of customers, such as car repair. Thirdly, information-based services which are value-creating activities related to data, such as banking. In addition to these three core categories, service firms also provide eight other categories of supplementary services, such as billing and payment.

Parasuraman (1986) remarks that there is a consensus in the literature concerning characteristics that differentiates between services and goods. Services have four unique characteristics, namely intangibility, perishability, inseparability, and variability. According to Loony et al. (2003), services are activities or processes characterized by two central notions, namely intangibility and simultaneity. Intangibility simply means that the result of a service transaction is not a transfer of ownership, as in the case of physical goods. Simultaneity means that the realization of a service implies the presence of provider as well as customer; both play an active role in the realization of services. Table 1 summarizes four basic characteristics of service.

Table 1: A Closer Look at the Characteristics of Services

Characteristics	Description
<i>Intangibility</i>	While goods are produced, services are performed. Service is an act or a deed that we cannot take home with us. What we can take home is the effect of the service.
<i>Simultaneity</i>	A good is produced first and then consumed but for a service, customers take part in its production process and consume it as it is being produced. Partial overlapping between production and consumption means there is a personal contact during the service delivery process.
<i>Heterogeneity</i>	It is related to the potential variability in the performance of a service. Where does the heterogeneity come from? <ul style="list-style-type: none"> • The service provider: Most services involve an interactive role on the part of services employees • The customer: The state of mind or the personal situation of the customer strongly influences his or her behaviour as well as the perception about a given service. • The surroundings: Several external factors may influence customer's perception about a given service
<i>Perishability</i>	Unlike goods, services cannot be stored. This is not only due to their intangibility but also due to their limitations in simultaneous production and consumption. Once a service has been produced, it has to be consumed; otherwise it is of no use.

Source: Loony et al. (2003).

John's (1999), work concludes that the word service has a great richness and diversity of meaning. This leads to lack of standardisation, which means that service is unique and assessing service quality can vary considerably from one situation to another even within the same organization (Berry et al, 1985). Therefore, Johns (1999) has suggested that the service

should always be accompanied by qualifying word to clarify the sense in which it is being used and that the context should be carefully explained.

2.2 Services in Higher Educational institution

The UK higher education sector is diverse, including small institutions, often with specialist focus and large multi-discipline institutions (HEFCE, 2002). The objectives of higher education are to provide in-depth knowledge, seek academic development, educate students, and coordinate national development demands (Johnes and Taylor, 1990). In order to deliver their core teachings and research missions, HEIs need to have substantial infrastructure. This often includes an extensive estate and buildings. Buildings include not only laboratories, lectures theatres and offices but also residential accommodation, catering facilities, sports and recreations centres.

Reports on The Economic Impact of UK Higher Educational institution by University UK (2006) stated that although HEIs' primary mission is teaching and research, HEIs have raised 25% of their revenues from other businesses such as catering or conference services business. Further, with increasingly diverse student population, there are also requirements for the HEIs to provide other services such as students support services, students welfare services, medical services, career guidance, etc.

This evidence has shown that the HEIs are organizations that provide diverse types of services. Due to the diversification of HEIs' services, the subject of quality service performance has received increasing attention. One of the problems facing HEIs seeking to improve service quality is that a body with meaningful performance measures has yet to be in existence (Frances, 1995). In recent years, a need for a renewed focus on higher education has been felt. Universities seek more effective systems to address the increasing dissatisfaction with the performance of higher education systems (Mizikaci, 2006). Since students are now being viewed as the primary customers of the HE service in the UK, one approach to assessing service performance is through the identification of students' satisfaction.

2.3 Student Satisfaction in the Context of Higher Education Services

There is a large body of literature on the concept of customer's satisfaction. The growing importance of studies on customer's satisfaction is a result of worldwide business competition. According to (Nicholls et al. 1998), customers are the lifeblood of any organization, be it private sector business or public sector government and satisfaction is particularly important in relation to organizations that deliver services rather than goods.

In the case of higher educational services, far fewer studies on customer's satisfaction have been conducted (Hall, 2001). According to Navarro et al. (2005), numerous attempts have been made by researchers to define the concept of satisfaction in relation to services offered in higher education. They acknowledge that satisfaction is the final state of psychological process. Elliot and Healy (2001) indicated that student's satisfaction is a short-term attitude that results from the evaluation of their experience with the education service received. It should be highlighted that most of the studies on this issue were carried out within the context of analyzing student's satisfaction for the main services or the core business offered by universities (Harvey, 1995; Hill 1995). However, Aldridge and Rowley (1998) pointed out that many higher educational institutions perform some evaluation on other aspects of students experience beyond the assessment of the quality of teaching and learning.

Sirvanci (2004) classifies HEIs' services into two categories, namely academic program and facilities. His model depicts student's flow in higher education, from admission to graduation. In this context, he has postulated that, those services will give an impact on student's teaching and learning experience.

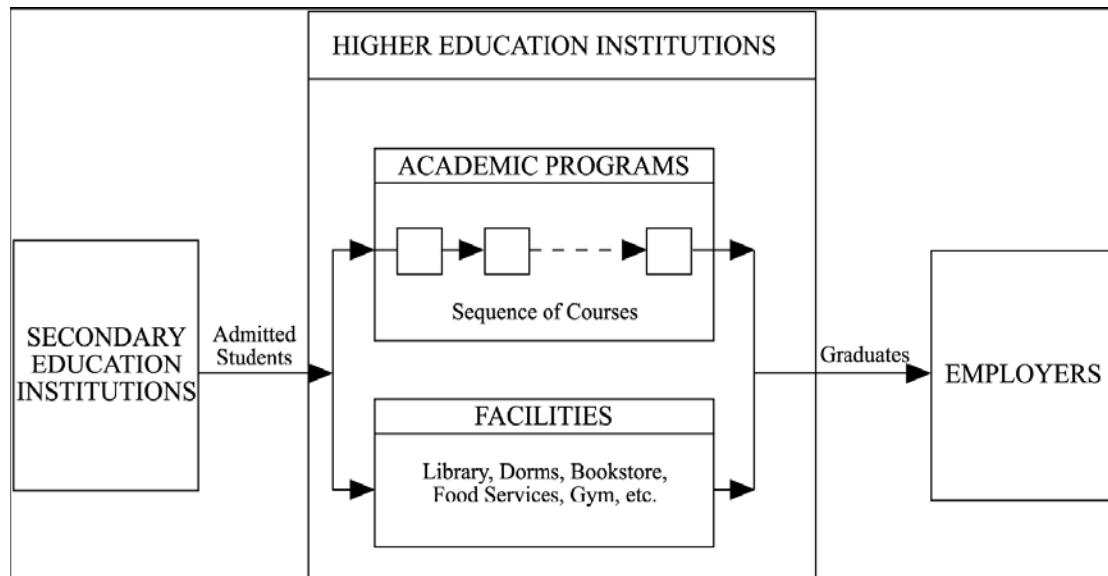


Figure 1: Student's flow in higher education (Source: Sirvanci, 2004)

Based on the literature review of HEIs, this study holds the view that facilities are important resources to higher educational institutions in providing for their core business. The teaching and learning factor is not something that occurs solely in the classroom but it integrates with the facilities. These two factors (teaching and learning, and facilities) are linked to each other and becoming ever more central to student's total experience and attitude towards a particular institution and this is termed as value chain. Therefore, in assessing student's satisfaction, these two categories of services are interrelated.

3.0 DATA AND ANALYSIS PROCEDURE

3.1 Questionnaire Survey Design

The questionnaire was essentially based on the literature review in facilities management and higher educational institution. In addition, a number of interviews were undertaken with experts in higher educational institution using a semi-structured questionnaire. According to (Clow et al. 1997), expert opinions are used to generate questionnaire items and an interview esecundary data collection. In this study, the interview conducted was used to review the factors that would have contributed to student's satisfaction and to improve the initial questionnaire design. Participants in the interview represented educational development unit, learning, teaching and research at selected higher education establishments.

For the present study, only quantitative data were generated from structured closed- ended questions. The questions were administered to a sample of selected higher educations students. The questionnaire covered three main sections.

Section one contained nine questions pertaining to respondent's background and profile. It covered issues relating to gender, ethnic origin, level of study, the university, the school, country of origin for overseas student, age, year of study and topic of study.

Section two required the respondents to indicate their opinion about the importance of each higher education's services using a five-point Likert Scale. The questions represented six main evaluation variables, namely teaching staff, teaching method, administration, physical facilities, enrolment and actual service.

The 'teaching staff' factor composed of five other sub-variables, the 'teaching method' factor consisted of ten other sub-variables, seven sub-variables for the 'administration factor', eleven sub-variables for the 'physical facilities' factor, four sub-variables for the 'enrolment factor' and finally eighteen sub-variables for the 'actual service' factor. The list of variables of each factor was extracted from reviews of higher education services literature and interview with experts in higher educational institution.

In this section, questions were designed to elicit information to determine student's opinion on the level of importance of higher education services that influence their levels of satisfaction. Responses questionnaire items were given on a five-point Likert Scale. Respondents replying to these items indicated 1 for "very unimportant", 2 "unimportant", 3 "--", 4 "important", and 5 "very important".

Section three comprised counter-check questions whereby each respondent was asked to rank six main higher level HE (why don't you use HE as you using this a lot) services in order indicate their priorities in learning process.

A covering letter to engage respondents' interest was attached to the questionnaire. The letter explained the nature and objectives of the research.

The draft questionnaire was initially tested within the school of built environment at Heriot Watt University and amendments were made based on responses. The questionnaire was then piloted to twenty students chosen randomly from a selected university and 14 were completed. It was conducted to explore the field conditions and acted as a trial run for the questionnaire (Naoum, 2003). This was in line with some other previous studies where a pilot study was conducted with the purpose of validating the practicality of the questions, identifying the likely response rate, and identifying and resolving any shortcomings as may be required (Watt *et al.*, 2000 and Bing Li *et al.*, 2003).

In this study, the questionnaire was delivered to a random sample of respondents by hand in one week duration. The most noticeable problem was that the respondents did not clearly understand the meaning of physical facilities and services. In order to resolve the problem, the specific meanings of physical facilities and services were given according to the definitions contained in this study. The second modifications concerned the 'teaching method' variables where time and method used in providing learning documentations were separated into two variables (instead of one) as there were cases where respondents have different opinions about the importance of each variable. After validating the respondents' recommendations and responses through the pilot questionnaire, a complete questionnaire was finally prepared as an instrument for data collection in this study.

3.2 Sampling

The random sample method was chosen in this study to ensure 'epsem': an equal probability selection method, where each population member has the same probability of appearing in the sample (Barnett, 1991). In other words, this type of sample was selected to ensure equal

chances of students with different backgrounds being chosen for obtaining different opinions on the factors that influence their levels of satisfaction for the use of higher educational facilities services. However, due of time and cost constraints, the sample was drawn from only three universities.

3.3 Data Collection and Procedure

There are various methods available to be adopted for data collection in quantitative research methodologies including telephones, postal and on-line method. Major factors which a researcher need to consider in designing a questionnaire for data collection is the structuring ability, question phrasing and questions asking in a way that is intelligible to the respondents. This factor have been highlighted by (Gill and Johnson, 1991) who formed the view that questionnaire focus, question phraseology, the form of response and question sequencing and presentation needed the required attention.

The questionnaire survey was conducted to the students among three selected university. The questionnaire was administered to distribute to randomly selected faculty, course and year of student. The distribution of questionnaire is by contacting the lecturer of a particular session or lecture and distributed at the beginning of the selected lecture session and the completed questionnaire were collected at the end of the session.

In the context of the present initial study, initially an email was sent to the particular lecturer selected using the simple random sample at the three university to announce the present research initiative, its aim and objectives and also to call for their cooperation and participation. The contact detail of the lecturer was identified through the website of the each university.

The first attempt to collect data, resulted in only, fifteen lecturers (out of fifty one) responding favourably to the invitation and willing to give permission to distribute the questionnaire to the students during their lecture session. Another email was sent as a reminder to the same batch of lecturer targeting those who had not responded to the first email. Subsequently six more lecturers were happy to participate.

In order for the distribution of questionnaire to take place, the lecturer who willing to participate have been contacted to fix with his/her eligible time. Once a lecturer has indicated his or her preferable time the questionnaire was distributed to students at the beginning of the lecture session and collected the completed questionnaire when the lecture ends.

Of the 600 questionnaire distributed, 460 were completed effectively representing a response rate of 76.6 per cent.

3.4 Analysis of Survey Data

This study used the Statistical Package for Social Sciences (SPSS) software version 12.0 for data analysis. The questionnaire data were broadly analysed into three main statistical components shown in **Figure 2**. Firstly, the descriptive statistics which provided data summary in terms of frequency analysis, mean and standard deviation.

Secondly, data reduction technique known as Factor Analysis was applied to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables. Factor Analysis is a technique that is useful for segregating

componential attributes of a given phenomenon of interest, according to their relative weightage. It is not designed to test hypotheses or to tell whether one group is significantly different from another. It is a 'data reduction' technique (Pallant, 2005). The technique allows for reduction of a large number of overlapping measured variables to a much smaller set of factors which is most impossible task to do by eye (Green, Salkind et al. 2000; Pallant 2001). According to (Minhas and Jacobs, 1996), the objective of factor analysis is to reduce a large number of observed variables (or persons or occasions) to a smaller set of underlying factors that preserve the essential nature of the original variables. Factors Analysis is so named because the individual attributes are grouped into a number of categories or factors (Naumann and Giel, 1995). Some exactness of description is sacrificed in order to gain a simplified understanding of numerous variables influencing behaviour.

This study employed Factor Analysis to identify the most important higher education services that influence student satisfaction. As indicated above, the main purpose of using factor analysis was to reduce the large number of variables (58) into fewer underlying and meaningful factors. The item in the questionnaire was aggregated according to the results of the factor analysis.

Thirdly, weightage analysis that was used to prioritise facilities management function that influences satisfaction.

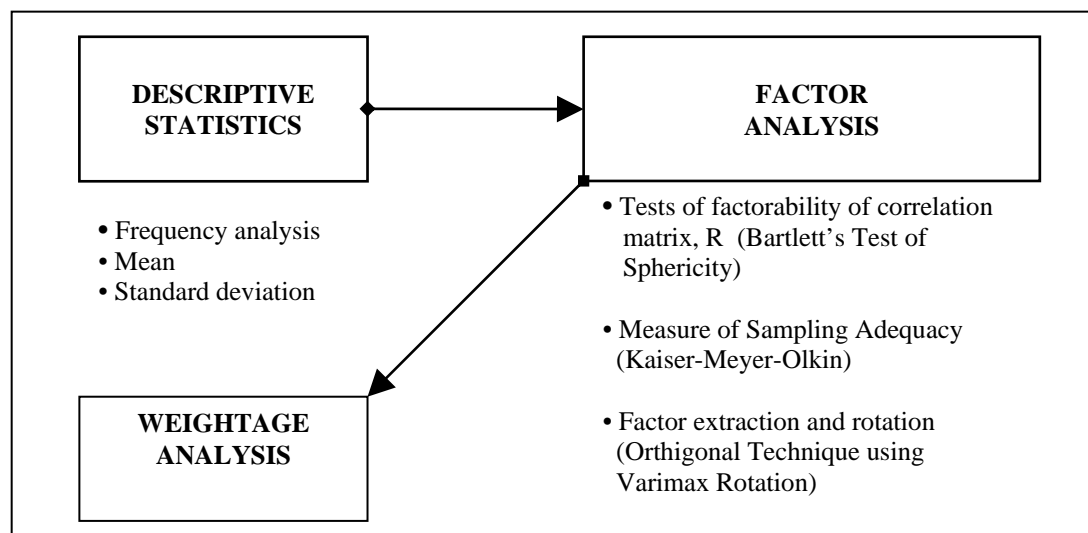


Figure 2: Statistical analyses used

4.0 RESULTS AND DISCUSSION

4.1 Respondents' Profile

Table 2, shows the profile of respondents by sex, ethnic group, level of study, and the university that they represent. Out of 460 students who responded to the questionnaire, 270 were males (58.7%) and 190 were females (41.3%). The majority of the respondents were whites (69.8%), followed by Asian (20.8%), African (5.9%), Hispanic (1.3%), and other ethnics (2.2%).

Table 2: Respondents' profile

Profile		Percentage (%)
Gender	Male	58.7
	Female	41.3
Ethnicity	White	69.8
	Asian	20.8
	African	5.9
	Hispanic	1.3
	Others	2.2
Year of study	1 st year	44.5
	2 nd year	14.7
	3 rd year	31.5
	4 th year	18.5
	5 th year	2.2
	6 th year	
Level of Study	Undergraduate	78.3
	Msc	14.6
	PhD	5.5
	Others	1.3
University	University 1	64.5
	University 2	29.4
	University 3	6.1

4.2 Factors that Influence Student's Level of Satisfaction for Higher Educational Services

To analyse student's satisfaction for higher educational services, the rank order of factors based on mean score was computed. The respondents were asked to rate the degree of importance of each factor that influences their level of satisfaction for a five-equal interval scale as discussed before.

Corresponding to section two of the questionnaire, 58 variables or factors that were perceived to be influencing the student's level of satisfaction were analysed. The results show that the most important factor that influences the student's level of satisfaction was teaching quality followed by teaching attitude, course content, teaching style, library, laboratory-PC, library services – all with a mean value score above 4.1 (Table 3).

The results show that students were most concerned about teaching staff as they perform the core business of a higher educational institution. This was not surprising as the previous study conducted by (Price *et al.*, 2003) and (Douglas *et al.*, 2006) have identified similar results. Therefore, this study can make a case that it is important to explore further on factors that influence teaching staff's performance as it will give an impact on student's learning.

Table 3: Factors that influence student's level of satisfaction for higher educational services (ranking based on mean value score below 4.1)

Ranking	Variables	Mean	Std. Deviation
1	Teaching quality (e.g. skill, knowledge of staff)	4.4978	0.82578
2	Teaching attitude (e.g. approachability of staff)	4.3326	0.84548
3	Course content	4.2941	0.83495
4	Teaching style (e.g. a manner or a way of performing)	4.2000	0.81863
5	Library	4.1830	0.97862
6	Laboratory – PC	4.1590	0.91493
7	Library services	4.1394	0.90254
8	Overall campus environment	4.0349	0.84554
9	Laboratory- PC services	4.0327	0.98516
10	Examinations method (e.g. paper base, verbal)	4.0284	0.90541
11	Application level between theory and practice (e.g. work base problem vs. theory)	4.0043	0.79485

The second major group of factors that influence student's level of satisfaction for higher educational services was those reflecting facilities management functions. Factors such as library, laboratory, and overall campus environment were of concern to students and, thus, these factors were important in the operations of higher education's core business. This result was parallel to the finding by (Price *et al.* 2003) who discovered that other than teaching and learning, facilities was the second factor that gave an impact on the undergraduate students in their choices of university. Other study by (Coles 2002) found that student's level of satisfaction would have decreased when class size was larger. (Douglas *et al.*, 2006) found that students have ranked IT facilities highly in their contribution to student's satisfaction level.

Table 4: The least important factors that influence the student's level of satisfaction for higher education services (ranking based on mean value score below 3.50)

Ranking	Variables	Mean	Standard Deviation
1	Childcare	2.6149	1.28948
2	Teaching appearances (e.g. dressing, tidiness)	2.6500	1.10717
3	Childcare services	2.7533	1.22262
4	Off-campus accommodation services	3.1157	1.09791
5	Off-campus accommodation	3.1572	1.17475
6	Cafeteria	3.2505	1.15046
7	Student union services	3.2527	1.08451
8	On-campus accommodation	3.2549	1.21236
9	On-campus accommodation services	3.2571	1.14425
10	Welfare rights services	3.2810	1.09857
11	Enrolment period	3.3137	.99213
12	Parking Area	3.3508	1.31379

The factors with lesser degrees of importance are listed in Table 4. Factor such as childcare and off-campus accommodation were among the factors that were not rated as influential to

student's level of satisfaction for receiving facilities at higher learning institutions. One reason for the low rating of childcare aspect among the respondents could be that most of them were in the range of 17 to 23 years old and, therefore, the service was not important to them. As for the rather low rating of off-campus accommodation among the respondents, the sole reason could be the fact that most of them stayed on-campus.

4.3 Factors that Influence Student's Level of Satisfaction for Higher Educational Services Using Factor Analysis

In this section, Factor Analysis is adopted as a data reduction technique whereby the most important groups of factors that influencing student's level of satisfaction were examined.

From the VARIMAX factor matrix, 62.99% of variance explained the 58 higher educational attributes that were captured in the 12 factors. High factor loadings signal a strong correlation of the variables with the factors on which they were loaded. To assess the reliability of the factor identities, a Kaiser-Meyer-Olkin (KMO) index was used. A KMO of 0.871 indicates high sampling adequacy.

However, in using Factor Analysis, to depend only on KMO criterion which can be explained by factors with high eigenvalue (>1) is rather unsaved. By using KMO's criterion, too many components were extracted – twelve in this study. Therefore, it is important to look at screeplot provided by SPSS (Pallant, 2005). Furthermore, according to Pallant (2005) in order to decide on the number of appropriate component we need to look for a change (or point of elbow) in the shape of the plot. Only component above this point were retained. Figure 3 illustrates the screeplot of each variance associated with each factor.

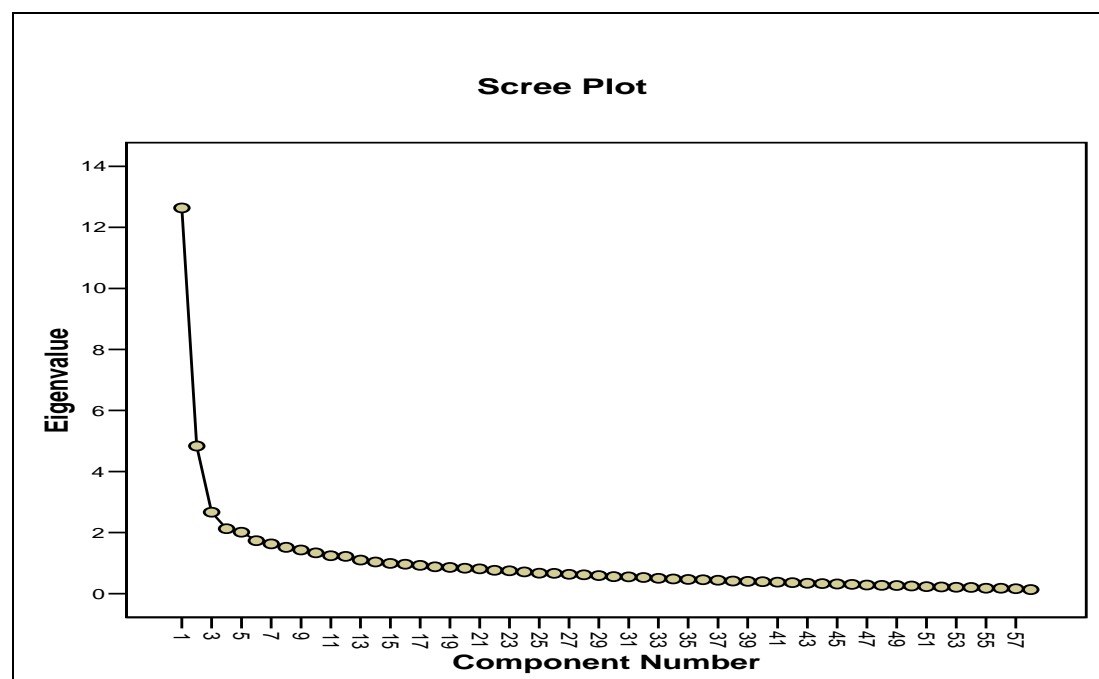


Figure 3: Screeplot of Factor Components in the Study

Figure 3 shows a clear distinction between the first and the second components. Components one and two capture much more of the variance than the remaining components. Besides, there was a little break after component three. Components four, five, and six are situated

much closer to each other. As such, on the basis of recommendation by (Pallant, 2005), this study extracts or retains factors that influence student's level of satisfaction for higher educational services into six factor components.

Table 5 shows the results of the factor analysis in terms of factor name, the variables loading on each factor, and the variance explained by each factor. The results of Cronbach's reliability coefficient are also shown. The loaded variables of the each component were ranked according to their factor values.

Table 5: Six Higher Education Sectors Identified by Principle Component Analysis

Code	Variables	Factor loading	Percentage of variance explain	Cronbach's alpha
<i>Factor 1: Teaching and learning delivery</i>			22.206	0.884
C4	Course content	.757		
A3	Teaching staff quality (e.g. skill, knowledge)	.685		
C5	Examinations method (e.g. paper base, verbal)	.623		
A2	Teaching staff attitude (e.g. approachability of staff)	.615		
A5	Teaching style (e.g. a manner or a way of performing)	.611		
C6	Assignment method (e.g. coursework, in class test, oral presentation, group work)	.568		
C3	Course organization (e.g. timetabling)	.551		
B7	Extent and distribution of subject (e.g. correct level/pace of work, relevance to your 'end' profession)	.516		
A1	Co-ordinations between subject expertise	.517		
D1	Library	.501		
<i>Factor 2: Support services facilities</i>			8.717	0.885
F18	Outside Activities (e.g. socialising/sport/music)	.737		
F15	Recreation and sport services	.674		
D12	Student union building	.657		
D11	Recreation and sport	.623		
F10	Student union services	.556		
F17	Career services	.510		
<i>Factor 3: Accommodation and social facilities</i>			4.508	0.886
D3	On-campus accommodation	.710		
F3	On-campus accommodation services	.701		
F4	Off-campus accommodation services	.682		
D4	Off-campus accommodation	.646		
D6	Child care	.504		
<i>Factor 4: Course administration</i>			3.683	0.808
E2	Form of payment	.775		
E3	Enrolment period	.761		
E4	Registration process	.728		
E1	The enrolment process	.625		
<i>Factor 5: Teaching and learning facilities</i>			3.488	0.870
F8	Laboratory - science services	.634		
F1	Library services	.563		
D8	Laboratory- science	.556		
<i>Factor 6: Teaching and learning service environment</i>			2.949	0.777
B9	Size of classroom	.772		
B8	The condition of lecture room (e.g. cleanliness, space allocation, furniture arrangement)	.710		
A4	Teaching appearances (e.g. dressing, tidiness)	.552		
B10	Visual equipment (e.g. delivery of lecture material such as power point, OHP, Acetates)	.534		

The six new factors that influence student's level of satisfaction can be interpreted as follows: Factor 1 "teaching and learning delivery", Factor 2 "support services facilities", Factor 3 "accommodation and social facilities", Factor 4 "course administration", Factor 5 "teaching and learning facilities", and Factor 6 "teaching and learning service environment".

4.5 The Most Important FM Factors that Influences Students Satisfaction Using Weightage Analysis

The primary objective of this research was to identify the major determinants of student's level of satisfaction and future intentions with respect to the key performance indicator for facilities services. Further analysis was required in identifying the ultimate FM factors within HEI setting that influence student's level of satisfaction. Such analyses can be used for developing facilities performance indicator which is the subject of an on-going research.

In determining the most important FM factors that influence student's level of satisfaction, six statistical criteria have been used based on the descriptive analysis and Factor Analysis previously discussed. The criteria are: value chain concept 'value'; value chain concept 'percentage'; facilities management function 'value'; facilities management function 'percentage'; average mean value, and higher mean value.

Table 6 presents the six factors that have already been identified by using Factor Analysis with the tabulation of weightage values. It clearly shows that Factor 1 ("teaching and learning delivery") carries 6 points for FM function value, 26% for FM function 'percentage', 4 points for value chain concept 'value' and 66.6% for value chain 'percentage'. It also carries an average mean value of 3.959 and Library was an FM factor that places itself at a higher order based on higher mean value. Factors 2 through 6 follow the order of importance according to the six descriptive criteria. Table 6 also shows the most important FM factors within higher educational institutions that influence student's level of satisfaction, namely library, overall campus environment, recreation and sport, cafeteria and lecture room.

Finally, to corroborate the above analysis, the most important FM factors that influence student's level of satisfaction (based on weightage values of six statistical criteria) needs to be identified in order to rank the FM factors. As depicted in Table 7, it shows that 'overall campus environment' was in the first rank under two criteria, namely FM function 'value' and FM function 'percentage'. Library was in the first rank three times in terms of value chain 'value', average mean value, and higher mean value. Lecture room was in the first rank in terms of value chain 'percentage' criteria.

Table 6: The weightage values for the six factors

Factor	FM function (value)	FM function (%)	Value chain (value)	Value chain (%)	Average mean value	The higher order facilities for each factor based on higher mean value
Teaching and learning delivery	6	26	4	66.6	3.959	Library
Support services facilities	12	75	3	25	3.536	Overall campus environment
Accommodation and social facilities	7	63.6	0	0	3.182	Recreation and Sport
Course administration	1	10	0	0	3.508	Cafeteria
Teaching and learning facilities	11	73	5	45.4	3.606	Library
Teaching and learning service environment	5	55.5	4	80	3.543	Lecture room

The result shows that library was found to be the most important FM element of higher educational services, (was placed three times in the first rank). Moreover, the result stipulated at the second rank has revealed the fact that library was the most important FM factor that could have influenced student's level of satisfaction. Thus, this finding concludes the study.

Table 7: Rank order of FM factor base on six statistical criteria

Rank order	FM function (value)	FM function (%)	Value chain (value)	Value chain (%)	Average mean value	Higher mean value
1	Overall campus environment	Overall campus environment	Library	Lecture room	Library	Library
2	Library	Library	Library	Library	Library	Library
3	Recreation and Sport	Recreation and Sport	Lecture room	Library	Lecture room	Overall campus environment
4	Library	Lecture room	Overall campus environment	Overall campus environment	Overall campus environment	Lecture room
5	Lecture room	Library	Recreation and Sport	Recreation and Sport	Cafeteria	Recreation and Sport
6	Cafeteria	Cafeteria	Cafeteria	Cafeteria	Recreation and Sport	Cafeteria

5.0 Concluding Remarks

One of the challenges facing higher educational institutions is to provide services that fulfil customers' requirements and expectations as these factors influence their satisfaction. Students as main customers of higher education have their own preferences and opinions on

the factors that affect their levels of satisfaction. As higher educational institutions become more concerned about meeting their students' satisfaction due to commercialisation of scholarships, identifying these factors will positively contribute to the decision-making with respect to provision of educational services (Sapri, Kaka and Finch, 2008).

The results from this study have disclosed that factors associated with teaching and learning were the most important factors that could have influenced student's level of satisfaction. Therefore, higher educational institutions should provide quality teaching and learning services. This finding did not surprise anyone as a number of studies conducted in this field have shown similar results. The findings by Banwet and Datta (2003) and Hill *et al* (2003) postulated that lectures, attainment of knowledge, class notes and materials and classroom delivery were the most important aspects of the core services provided by higher educational institutions.

However, this study discovered that 'teaching and learning' factor was not only focusing on course materials or subject contents but also teaching staff capability in delivering teaching and learning services. This finding was in support of a previous study by Douglas *et al.* (2006) who found that the most important aspects of university under study were the ability of teaching staff, followed by subject expertise of the staff. To the delight of this study, the Government White Paper has recommend that all newly recruited university teaching staff starting from year 2006 to obtain a teaching qualification that incorporates agreed professional standards (HEFCE *et al.*, 2003).

The model of value chain concept developed in this study has explained the FM function within the teaching and learning environment of higher education. The model has demonstrated that student's learning experience is influenced by three major factors, namely service provider's performance e.g. the lecturer; service or process that is involved in delivery of the service; and facilities which act as an enabler and support the core business process. These three factors will give an impact on student's learning experience and will lead to satisfaction levels pertaining to service performance. All these activities take place during the delivery of the service. Thus, it is important for the higher educational institutions to look into the factors that influence teaching staff's performance given their key contribution to student's overall level of satisfaction. The results of this study also suggested a significant relationship between teaching staff's performance and student's level of satisfaction. Therefore, this study proposed that the value chain concept be adopted as a strategy to meet student's expectations. Figure 4 shows the value chain concept postulated from this study.

This study, however, has some limitations. The results have represented students' opinions about higher educational services only from a few selected universities. Therefore, care must be taken not to generalize results to all institutions. Notwithstanding this, most of the results in this study were similar to some previous research findings. It has contributed to the amplification of knowledge and information. Apart from that, has provided higher educational institutions with useful decision-making tools to improve their core business, i.e. education.

In terms of researching technique, the random sample of respondents and the administration of the questionnaire have some caveats. The instrument was handed out to students at the beginning of lecture sessions and collected at the end. At this time, student minds could have been occupied with lectures. As such, these elements could have influenced the revelation of their opinions.

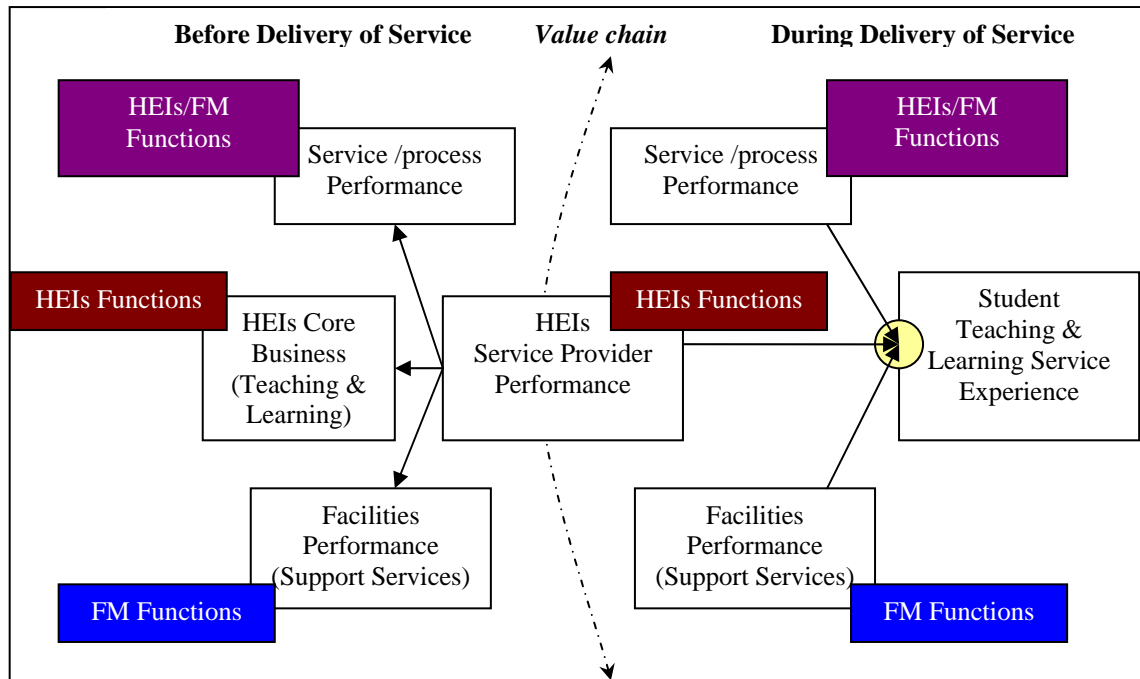


Figure 4: The value chain concept proposed

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