

THE IMPORTANCE OF CUSTOMER SATISFACTION AND CUSTOMER COMPLAINT TOWARDS A BETTER QUALITY SERVICE USING SIX SIGMA: AN ACADEMIC PERSPECTIVE

MOHAMAD NASIR SALUDIN¹ & TAN PEI KIAN²

Abstract. The purpose of this study is to evaluate the service quality that Multimedia University library (MMU) Malacca provides to its customers, by measuring the customers' level of satisfaction and judgment on the importance and effectiveness of customer complaints management system implemented by MMU library. A total of 253 samples were gathered from 300 questionnaires distributed among regular users of MMU library. A questionnaire was designed and used as the data gathering instrument based on the SERVQUAL model which consists of five dimensions (tangibles, reliability, responsiveness, assurance and empathy). The modification of SERVQUAL questionnaires examines the gap between perceived value and expectations of customers' towards the services provided. The concept of "gap analysis" was applied to indicate actual satisfaction level of customers towards the selected dimensions in the SERVQUAL model. Closed ended questions were selected for both areas, satisfaction and complaint management. Based on a five point Likert scale, respondents are required to rate their satisfaction level according to their experienced with MMU Library. The study found that the dimensions of responsiveness and empathy were at the lowest satisfaction level among MMU students. Recommendations and suggestions are presented in this study to improve the service quality of MMU (Malacca) Library by using the six sigma model. Six sigma is a way to measure the probability that companies can manufacture or produce any given unit of a product (or service) with zero defects. In statistics, sigma (σ) denotes the standard deviation of a set of data. It provides a measure of variability which indicates how all values in a statistical distribution vary from the mean (average) value. Six sigma is the rating that signifies "best in class," with only 3.4 defects per million units or operations.

Keywords: Quality service; customer satisfaction; SERVQUAL; complaint management; six sigma

Abstrak. Tujuan utama penyelidikan ini adalah untuk menguji tahap kepuasan pengguna perpustakaan MMU (Melaka) dan mengenal pasti tahap keefektifan pengurusan aduan yang diamalkan selama ini. Sejumlah 253 sampel berjaya dikumpul daripada 300 borang soal selidik yang diedarkan. Penggunaan borang soal selidik yang berteraskan kepada model SERVQUAL di mana lima dimensi penentuan kualiti perkhidmatan digunakan (*tangibles, reliability, responsiveness, assurance dan empathy*). Melalui jurang perbezaan antara kepuasan dan jangkaan pelanggan, penyelidik berjaya mengenal pasti tahap kepuasan sebenar pengguna MMU. Soalan tertutup dipilih untuk kedua – dua bahagian, iaitu kepuasan pelanggan dan pengurusan aduan pelanggan. Responden diminta menyatakan tahap kepuasan mereka berdasarkan kepada pengalaman mereka bersama perpustakaan MMU. Kajian ini mendapati bahawa dimensi *responsiveness* dan *empathy* mencatat nilai kepuasan terendah di antara

¹ Fakulti Pengajian & Pengurusan Pertahanan, Universiti Pertahanan Nasional Malaysia, Kem Sungai Besi, 57000 Kuala Lumpur

Email: nasir.s@upnm.edu.my

² Fakulti Busines dan Undang-undang, Jalan Ayer Keroh Lama, 75450 Bukit Beruang, Melaka

Email: pktan@mmu.edu.my

pengguna perpustakaan. Langkah penyelesaian dan cadangan telah dikemukakan untuk memperbaiki tahap kualiti perkhidmatan di perpustakaan MMU (Melaka). Six sigma merupakan salah satu alat pengukuran yang digunakan oleh organisasi dalam menghasilkan seunit output atau produk yang mencapai kecacatan sifar. Dalam statistik, sigma (σ) melambangkan variasi yang wujud dalam data. Ia menunjukkan jurang perbezaan antara data dalam distribusi statistik bagi nilai min (purata). Selain itu, six sigma juga mewakili nilai *best in class* di mana kecacatan yang dicatatkan hanya 3.4 kecacatan dalam jutaan pengeluaran.

Kata kunci: Kualiti perkhidmatan; kepuasan pelanggan; SERVQUAL; pengurusan aduan; six sigma

1.0 INTRODUCTION

Multimedia University Library (MMU Library) is the centre of academic life of the university providing information and services to both Cyberjaya and Melaka campuses. The MMU Library was established to be an effective focal point of document and information supply in digital formats, worldwide library services and international library cooperation. It plays a vital role in supporting the teaching, learning, research and programme development of the university to achieve MMU vision to be a world class university that leads in learning and research within the broad sphere of multimedia and information technology. The library provides a wide range of resources in printed and non-printed format to enable student's access to a vast collection of information, resources, and learning materials. These include books, periodicals, newspapers, sound and video recordings, special collections, reference collections, and an expanding range of electronic resources such as CD-ROMs, computerized bibliographic databases, electronic journals, Internet resources, and online information. Most of these materials are on open access and can be freely consulted by browsers and borrowers alike. The collections and resources are carefully selected to meet and suit the course requirements and are relevant to the current teaching and research interests of the university. The library also digitizes theses, examination papers and seminars/proceeding/workshop papers presented and attended by university staff and students, and provide access to a variety of electronic resources. Therefore, students can access computerized indexes, CD-ROM versions or digitized formats of information and they may also access specialized in-house databases.

The library also offers a wide range of services, both online and traditional in satisfying the information needs of the students, including loan services, electronic information services, user education, reference services, interlibrary loan services, and document delivery services. The library provides a range of study places too, from carrel for individual studying to open reading area. It also offers other facilities such as daily-based and monthly-based lockers, home theatre, audio-visual room and photocopying services. The online library catalogue, namely GEOWEB, enables students to search for library collections. It is easy to use and has many self-service features including loan renewals, reservation of items on loan to other users and the checking of items on loan. This service is available across the campus and worldwide. Besides the online

catalogue, the library also provides a number of terminals to allow students to search and navigate the borderless world of information. Various online databases are also available in the library and these databases are accessible through the library's homepage. The library also provides links and the latest periodicals from the web-based resources to enable students to keep abreast with the latest developments in the world.

The major aim of the library is to help students make the best use of the services provided. Induction courses on the use of services and resources are provided, and the courses on information skills, including the use of various databases and online resources are given. Besides, a comprehensive array of online guides and webpages that describes services and resources in detail is also provided. The library also aims to provide easy and swift access to the materials needed by the students.

Established in 1996 when the University TELEKOM opened its first campus in Bukit Beruang Ayer Keroh Melaka, Malaysia, the library was named University TELEKOM Library (UNITELE Library). The UNITELE Library could accommodate about 600 students during that period. The MMU Melaka Library moved to a new building in May 2000. In 1999, another Multimedia University Library was opened in Cyberjaya, Selangor, Malaysia. This library was named Siti Hasmah Digital Library and was launched on 24th July 2000 to become the first Academic University Digital Library for the nation. MMU Library's vision and mission are to be the best in its class in connecting people with knowledge proactively and to provide high quality resources and services in supporting the instructional, research and development programmes



Figure 1 The MMU library web page

of the University. The goals of MMU library are to provide customers' information sources in timely manner, accessibility to variety formats of resources, advance in initiating the new development of technologies, offer conducive environment for nurturing life long learning, maintain professionalism and competency in dealing with customers and manage the library in cost effective manner (See Figure 1).

2.0 LITERATURE REVIEW

The term 'customer satisfaction' refers to how a company fulfills its customers' expectation through the delivery of products and services. Customer satisfaction can serve as the winning point that provides a competitive edge to a certain company while competing against its competitors. For instance, a company that manages to retain the quality of its products yet fail to satisfy its customers is more likely to be at the losing end compared to a company that manages to take care of the product quality and at the same time manages to cater to customers' needs and wants. A satisfied customer is always a good sign. He or she will have a higher tendency to buy products or use services from the same company in long term basis. Furthermore, a company may get advertised through word-of-mouth (WOM) from the satisfied customers. Customer satisfaction applies to both manufacturing companies and services companies. Customer satisfaction is a measure to indicate the success of companies in providing products or services or both. It is an important aspect to monitor customer experience. Customer satisfaction can be measured using the SERVQUAL model which consists of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Tangibles refer to the physical aspects such as facilities, equipments and personnel. Reliability is defined as the ability of products or services to perform the intended function or service accurately. As for responsiveness, it refers to the willingness and readiness of company's staff to assist customers and provide prompt service. The term assurance deals with trustworthiness and the guaranty of good products and services from the company while the term empathy means to understand the customers and knowing how to tend to their needs.

SERVQUAL was introduced in 1988 by A. Parasuraman, Valarie A. Zeithml and Leonard L. Berry as an instrument for performing an analysis of an organization's service quality and satisfaction. The method involves the development of an understanding of the perceived service needs and the expectation of target customers, which are the students. According to Baca (2006), the libraries were the earlier adopters of SERVQUAL to measure service quality and remain the most ardent testers of the instrument and underlying theory. There have been a number of studies carried out that distrust the validity of the 5 dimensions of SERVQUAL. According to some findings, it appears that the use of different scores in calculating SERVQUAL results in problem with reliability. The researches suggest that caution should be exercised in the use of SERVQUAL scores. Although limitations exist, the model is greatly used to evaluate service quality in different fields. The researchers have used

SERVQUAL as an instrument to access service quality in library setting. The modification of SERVQUAL was introduced to academic library by Altman and Hernon (Cullen, 2001).

Customer satisfaction is an abstract concept. One individual may have a different perception with another individual about a company's product or services. Thus, their evaluation regarding customer satisfaction may differ from one another. The level of satisfaction itself can vary from one customer to another. Customer may compare the product or services with competitors who provide the same products or services. For that matter, it is important to take competitors into consideration while weighing customer satisfaction. According to Morrell, the need to measure and improve customer satisfaction was easily seen as the most important future trend, getting more maximum scores than every other trend added together (Schelmetic, 2007). It indicates that future trend may encourage companies to centralize their operations upon customer satisfaction. Satisfied customers are important as they determined the existence of the companies themselves. Without the customers, a company loses its purpose. Satisfied customers are more likely to turn into regular customers who will linger in a long term relationship with the company. Furthermore, they will indirectly promote the company by telling their family and friends about how satisfied they are with the products or services provided by the company. Due to that reason, it is important for a company to ensure that its customers are really happy and satisfied. It has been stated that studies show that there is a gap between the percentages of companies who think their customers are happy with the percentages of customers who are truly happy, (Schelmetic, 2007). Besides that, customers may lose affection for a brand after a bad experience, which means that their experiences while shopping for products or services will shape their perception about the company. Therefore, improving customer satisfaction level is the most pressing managerial issue that surpasses other issues such as profit increment and cost reduction.

Apart from that, customer satisfaction is important as it is the key to reclaiming economic dominance. As quoted from Fornell (2006), "*Regardless of the potential opportunities presented by new markers, or within new and different industries – or from influx of a competitor's customers – the key to business success remains customer service and satisfaction.*" Satisfied customers are seen as the core to optimal performance and financial returns. In business perspective, increased demand is equivalent with increased price and better margin. In order to score a higher demand, a company must first fulfill its customers' needs and wants to generate satisfied customers. Reducing customer service and putting a high reliance on technology and gadgetry has proved unwise. According to Fornell (2006), Apple's company which focuses on customer service has managed to attain fierce loyalty among its customers. It brings in profits and sales increased. On the contrary, Dell Company has suffered a sharp drop due to long wait-times and massive difficulties with Dell's customer service call center. Comparing these two cases, it is clear that customer satisfaction is indeed an important

aspect in determining the success of the business. If a company failed to put customers before anything else at the present time, it will likely suffer later in future. Organizations must work harder in catering to customers' preference. Satisfying customers undoubtedly brings financial reward to the organizations as the purpose of business is to create satisfied customers.

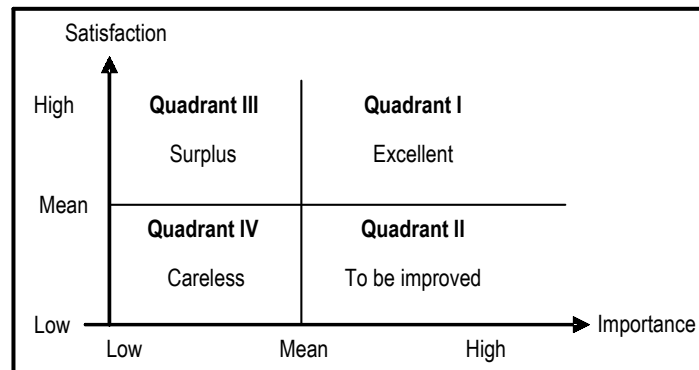
Customer satisfaction is also claimed as a reflection of employee satisfaction (Mohamed Zairi, 2000). Clemmer (2007) stated that, real improvements in customer service start with providing superior service and support to the employees themselves. However, misunderstanding happens when manager prepare training programmes for staff to teach them how to handle dissatisfied customers, yet at the same time, their processes and systems do not support front line servers. Dealing with dissatisfied customers is not the answer, instead it is better to avoid any. As the old saying goes, "prevention is better than cure." The manager should change the tactic. Instead of teaching the staff to deal with unsatisfied customers, it is absolutely better to teach them on how to satisfy the customers. At the same time, to improve customer service depends on the people who provide the service themselves. In reference to Clemmer (2007), this enthusiasm, loyalty, or devotion can't be forced on people. It only happens through a culture of commitment where front line people reflect to the outside the intense pride and ownership they are experiencing on the inside. Besides that, it is important for an organization to communicate with its customers. Two way communication allows the company to serve the customers parallel with their preference and thus ensure customers' loyalty to the company.

After discussing about customer satisfaction, now comes the big question itself. How does a business ensure customer satisfaction? According to Thompson (2002), there are seven steps to achieve customer satisfaction. The first step is to encourage face-to-face dealings. As stated previously, communication between an organization and the customers is important. Face-to-face dealing helps to increase the quality of communication as it is easier to talk in person rather than dealing through phone calls. The second step is to respond to messages promptly and keep the clients informed. Again, it is linked with communication. By practicing this step, customers are aware that they are being attended to and it prevents customers from feeling that they are neglected by the company. The third step is by being friendly and approachable. Needless to say, a warm character will attract more customers rather than a cold appearance. The next step is to have a clearly defined customer service policy. Thompson (2002), stated that it is important to ensure that all the staff know exactly what to do at each stage of enquiry to avoid annoyed clients. The fifth step is by giving attention to details. By doing so, it proves that a company cares for the customers and at the same time, it will make customers feel appreciated and thus increases their satisfaction. The sixth step is to anticipate the client's need and help them out. As a matter of fact, this is one of the most crucial aspects that a business should consider. Knowing a client's need itself is not enough, but to help them in fulfilling the need will

provide the company with competitive edge. The seventh and final step is to honor the promises. Thompson (2002), declared that "*The simple message: when you promise something, deliver.*" However, if the company failed to keep its promise, an apology to the customer is a must. Otherwise, the customer will feel that he or she is being cheated and spreads the unpleasant encounter to the others, thus bringing bad reputation to the company. On the other hand, satisfied customers will always come back.

Complaint handling has become a part of most companies customer retention strategies as more and more companies recognize the value in developing and maintaining long – term relationships with their customers. Informal complaints are classified as verbal complaint, often at the time where action need to be taken or at least someone to acknowledge their reason for dissatisfaction whereas formal complaints are normally in writing (Seelos & Adamsom, 1994). Eccles and Durand (1998), feel that complaints made by the customers are not considered as a bad situation but it depends on the action taken by the organization. In theory, this suggests that if the customer is not happy, only one – third of such individuals will return. When a successful service recovery process is in place, the statistics somewhat changes. The number of dissatisfied customers falls heavily if firms implement a service recovery system. Eighty per cent of customers will return if they are satisfied with the response given. Overall, customers will tell or share with five of their closest acquaintances about the way their problems were successfully resolved, whereas if customers received a good service initially, they will only inform three. Dissatisfied customers may not complain to the service provider, but will choose to tell a number of people about the bad service they received. A range of techniques must be used to ensure customers have the adequate means by which they can register their views. Self – completion questionnaires are the most commonly used of these as they are able to identify all the potential problems.

In addition to service recovery, this paper makes an attempt to demonstrate the effectiveness of six sigma in handling and solving customer complaint and satisfaction. Six sigma, a statistically – based quality improvement program, helps to improve business processes by reducing waste, by reducing costs resulting from poor quality and by improving the levels of efficiency and effectiveness of process (Hoerl and Snee, 2002). Ultimately, these process improvements should lead to improved customer satisfaction with product and increased firm profitability (Antony and Banuelas, 2001). Most literature on quality management, improvement or productivity philosophies are originally designed to improve product quality produced in the manufacturing sector as it is easily defined and measure whereas in the service sector, because they produced intangible products usually with direct customers contact, it tend to be hardly understood, defined, and measured. However, six sigma is also workable for any service industry if they are prepared for it. Preparation in terms of measurement of quality process and programs will determine the success of this model. Systematic



Source: Yang (2003)

Figure 2 Importance – satisfaction model

documentation and process by using the application of six sigma provides better guidance and standardize the overall operation handling of MMU library.

2.1 The Establishment of Importance – Satisfaction Model

Low quality attributes should not be the only consideration when designing improvement plans. Firms must take actions to improve the important attributes with lower satisfaction levels “*Quadrant II*” (Chen, Yang, Lin & Yeh, 2007). Figure 2 shows the matrix of an *I – S model* which was developed by (Yang, 2003). Thus, this model is the best application model for evaluating service quality. The results for each quality attribute are stated in this model. Improvement and recommendation are proposed and determined based on the position of each variable.

3.0 METHODOLOGY

A quantitative survey by using a questionnaire was designed to access the service quality of the library, the SERVQUAL model was adopted as an evaluation tool. The SERVQUAL model was incorporated into the questionnaire, which consequently divides into five distinct dimensions (tangibles, reliability, responsiveness, assurance and empathy). There are 4 major parts considered in the process to develop the questionnaire. Likert scale of 1 to 5 was selected, respondents are required to rate their satisfaction level using the perceived value and expected criteria with regard to the service being offered by MMU Library in parts 1 and 2. The respondents were asked to rate each item on a five-point scale as follows: ranging from (1) very dissatisfied to (5) very satisfied for perceived expectation level of services. Whereas for the expectation, scale ranged from 1 (not important at all) to 5 (very important) was selected. For part 3, respondents are required to rate the importance and effectiveness of customer complaints management system implemented by MMU library. Scale ranged from 1

(not important at all) – 5 (very important) for the degree of importance was identified and for the degree of effectiveness, scale ranged from 1 (not effective at all) – 5 (extremely effective) was selected. In part 4, users are required to evaluate the overall performance of MMU library which consists of a range from (very unsatisfied to very satisfied). Simple random sampling was chosen in selecting the size of the sample used in this research. A total of 300 questionnaires were distributed, and because of missing data, only 253 were used in the analysis, thus giving a response rate of 84.3%. The participants were approximately 44.7% male and 55.3% female; 14.6% Malay, 73.1% Chinese, 4.0% Indian and others with 8.3%. To conduct the gap analysis, each factor for every dimension need be identified before the analysis by using SPSS version 16.0. Mean score for factors influencing the customer satisfaction is then calculated by using the below formula.

$$\text{Gap Analysis} = (\text{Mean II}) - (\text{Mean I})$$

Mean I: Factors influencing customer expectation on an excellent library (expectation)

Mean II: Level of satisfaction on existing services offered by MMU library (perceived value)

4.0 FINDING AND ANALYSIS

The analysis which is used in this research are reliability test, descriptive, gap analysis, *I – S model* applications and analysis by constructing the simple scatter plot and correlation test.

4.1 Reliability Test

The reliability of the questionnaires was tested according to Cronbach's Alpha measures. Reliability test is generally measured by Cronbach's α . The value of alpha (α) obtained from this research was 0.9626. The reliability coefficient of each dimension were as follows: Cronbach's α of customer perceived value or satisfaction was 0.9559 and the Cronbach's α of customer expectation was 0.9778. The differences between these two figures are small, about 0.96 ~ 0.98, which indicates, that the instruments used in setting up the questionnaires in this research are highly reliable (Nunally, 1978).

4.2 Gap Analysis (Perceived Value and Expectation)

From Table 1, the SERVQUAL ranking and gap analysis ranking is generated and shown in the following tables.

The results showed that most of the customers or students of MMU are dissatisfied with services pertaining to responsiveness (-1.1600) and empathy (-1.1462). This is shown and proven in Table 3. Problem occurred under the responsiveness and empathy

Table 1 Perceived value and expectation

| No. | Attributes | Perceived Value Mean Value (Scale of 1 to 5) (II) | Expectation Mean Value (Scale of 1 to 5) (I) | Gap Score (II – I) |
|--------------------------------------|--|--|---|---------------------------|
| 1. | General physical facilities | 3.1858 | 4.3439 | -1.1581 |
| 2. | Visual appealing facilities associated with materials like pamphlets and leaflets | 3.0119 | 4.0751 | -1.0632 |
| 3. | Condition of the books provided in the library | 3.1265 | 4.2451 | -1.1186 |
| 4. | Lighting and air condition system | 3.5336 | 4.3085 | -0.7749 |
| 5. | Librarians appear neat and appropriately dressed or professional appearance | 3.3913 | 3.9723 | -0.5810 |
| 6. | Availability of computer terminals, online public access catalogue (OPAC/GEOWEB), etc. without excessive waiting | 2.7312 | 4.3360 | -1.6048 |
| Overall Mean (Tangibles) | | 3.1634 | 4.2134 | -1.0500 |
| 7. | Accuracy of information provided by the library | 3.2016 | 4.1660 | -0.9644 |
| 8. | Timeliness of the services being provided by the librarians | 3.2530 | 4.1146 | -0.8616 |
| 9. | Availability of the services being provided by the library | 3.1423 | 4.2016 | -1.0593 |
| 10. | Fairness of the services provided by the librarians | 3.1067 | 4.1621 | -1.0554 |
| 11. | Effectiveness of MMU library's policies and its working operations | 3.0593 | 4.1700 | -1.1107 |
| 12. | Library staff dependability in handling customer's service problems | 3.0158 | 4.2095 | -1.1937 |
| 13. | Library staff on keeping customers informed about when services will be performed | 2.9723 | 4.2292 | -1.2569 |
| Overall Mean (Reliability) | | 3.1073 | 4.1790 | -1.0717 |
| 14. | Libraries promptness in its service delivery | 3.0553 | 4.0474 | -0.9921 |
| 15. | Librarian's willingness to assist customers' with their request or problems | 3.0040 | 4.0949 | -1.0909 |
| 16. | Readiness the librarians imposes to respond and solve customers' request and problems | 3.0356 | 4.1304 | -1.0948 |
| 17. | Length of time it take to receive requested materials | 3.0237 | 4.1779 | -1.1542 |
| 18. | New/updated information provided | 3.1146 | 4.2332 | -1.1186 |
| 19. | Promptness of the library staff in providing feedback towards complaints | 2.8221 | 4.1700 | -1.3479 |
| 20. | Speed of the replies being provided by the library staff towards online queries | 2.8814 | 4.2035 | -1.3221 |
| Overall Mean (Responsiveness) | | 2.9910 | 4.1510 | -1.1600 |
| 21. | Degree of accuracy contained within the information provided by the library | 3.1858 | 4.0237 | -0.8379 |

| | | | | |
|---------------------------------|--|---------------|---------------|----------------|
| 22. | Knowledge level and skills the librarians present when answering queries | 3.1344 | 4.0830 | -0.9486 |
| 23. | Level of security provided by the library online system when accessing customer details to download online materials | 3.1225 | 4.1779 | -1.0554 |
| 24. | Level of correctness in the services provided by the librarians | 3.1542 | 4.1028 | -0.9486 |
| 25. | Confidence level of MMU librarians in solving problems | 3.1067 | 4.1621 | -1.0554 |
| 26. | Trustworthiness, believability and honest of MMU librarians | 3.2024 | 4.1621 | -0.9597 |
| 27. | Employees in instilling confidence in customers | 3.0672 | 4.1107 | -1.0435 |
| Overall Mean (Assurance) | | 3.1412 | 4.1174 | -0.9762 |
| 28. | Level of courtesy offered by the librarians | 3.1107 | 4.0711 | -0.9604 |
| 29. | Level of politeness provided by the librarians | 3.0237 | 4.1542 | -1.1305 |
| 30. | Availability of the librarians to attend to customers' needs individually | 3.0395 | 4.1265 | -1.0870 |
| 31. | Degree of courtesy applied in the library rules and regulations | 2.9091 | 4.2609 | -1.3518 |
| 32. | Library staff's giving individual attentions to the users | 3.0514 | 4.0553 | -1.0039 |
| 33. | Library staff's having the users' best interest at hearts | 2.9130 | 4.1621 | -1.2491 |
| 34. | Library employees understand the needs of their customers | 2.9447 | 4.1858 | -1.2411 |
| Overall Mean (Empathy) | | 2.9989 | 4.1451 | -1.1462 |

Table 2 SERVQUAL ranking table

| | SERVQUAL (Ranking) | | | | |
|---------------------------------------|------------------------------|--------------------------------|-----------------------------------|----------------------------|-----------------------------------|
| | 1 st | 2 nd | 3 rd | 4 th | 5 th |
| Perceived Value (Satisfaction) | <i>Tangibles</i> (3.1634) | <i>Assurance</i> (3.1412) | <i>Reliability</i> (3.1073) | <i>Empathy</i> (2.9989) | <i>Responsiveness</i> (2.9910) |
| Expectation (Importance) | <i>Tangibles</i> (4.2134) | <i>Reliability</i> (4.1790) | <i>Responsiveness</i> (4.1510) | <i>Empathy</i> (4.1451) | <i>Assurance</i> (4.1174) |

Table 3 Gap analysis ranking table

| | Gap Analysis (Ranking) | | | | |
|---------------------------------------|-----------------------------------|----------------------------|--------------------------------|------------------------------|------------------------------|
| | 1 st | 2 nd | 3 rd | 4 th | 5 th |
| Perceived Value (Satisfaction) | <i>Responsiveness</i> (2.9910) | <i>Empathy</i> (2.9989) | <i>Reliability</i> (3.1073) | <i>Tangibles</i> (3.1634) | <i>Assurance</i> (3.1412) |
| Expectation (Importance) | (4.1510) | (4.1451) | (4.1790) | (4.2134) | (4.1174) |
| Gap Score (II – I) | -1.1600 | -1.1462 | -1.0717 | -1.0500 | -0.9762 |

dimension directly linked to staff. The problems identified under the dimension of responsiveness are promptness of the library staff in providing feedback towards complaints (-1.3479) and speed of the replies being provided by the library staff towards online queries (-1.3221). The main contributing factors under the dimension of empathy are degree of courtesy applied in the library rules and regulations (-1.3518), library staff's having the users' best interest at hearts (-1.2491) and library employees understanding the needs of their customers (-1.2411). However, from the SERVQUAL ranking table (Table 2), majority of MMU students are satisfied with the dimension of tangibles which refers to the physical aspects such as facilities, equipments and personnel (3.1634). Assurance ranks as second with mean score of (3.1412) and followed by reliability (3.1073). Customers' expectation or the importance of each contributing dimension show the same trend where majority of the MMU students agreed that tangibles are the most important of all with the mean value of (4.2134) followed by reliability with the mean score of (4.1790).

4.3 Importance – Satisfaction Model Applications and Analysis

4.4 I – S model results:

Quadrant I – Excellent:

1. General physical facilities
3. Condition of the books provided in the library
4. Lighting and air condition system
7. Accuracy of information provided by the library
9. Availability of the services being provided by the library
10. Fairness of the services provided by the librarians
18. New/updated information provided
23. Level of security provided by the library online system when accessing customer details to download online materials
25. Confidence level of MMU librarians in solving problems
26. Trustworthiness, believability and honest of MMU librarians

Quadrant II – To be improved:

6. Availability of computer terminals, online public access catalogue (OPAC/GEOWEB), etc. without excessive waiting
11. Effectiveness of MMU library's policies and its working operations
12. Library staff dependability in handling customer's service problems
13. Library staff on keeping customers informed about when services will be performed
17. Length of time it take to receive requested materials
19. Promptness of the library staff in providing feedback towards complaints
20. Speed of the replies being provided by the library staff towards online queries
31. Degree of courtesy applied in the library rules and regulations
33. Library staff's having the users' best interest at hearts
34. Library employees understand the needs of their customers

Quadrant III – Careless:

- 2. Visual appealing facilities associated with materials like pamphlets and leaflets
- 14. Libraries promptness in its service delivery
- 15. Librarian’s willingness to assist customers’ with their request or problems
- 16. Readiness the librarians imposes to respond and solve customers’ request and problems
- 27. Employees in instilling confidence in customers
- 29. Level of politeness provided by the librarians
- 30. Availability of the librarians to attend to customers’ needs individually
- 32. Library staff’s giving individual attentions to the users

Quadrant IV – Surplus:

- 5. Librarians appear neat and appropriately dressed or professional appearance
- 8. Timeliness of the services being provided by the librarians
- 21. Degree of accuracy contained within the information provided by the library

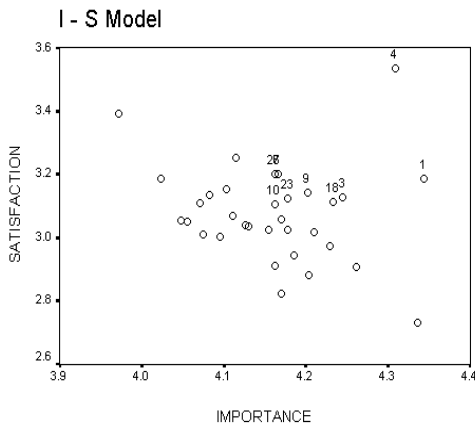


Figure 2.1 *I – S Model* (Quadrant 1 – Excellent)

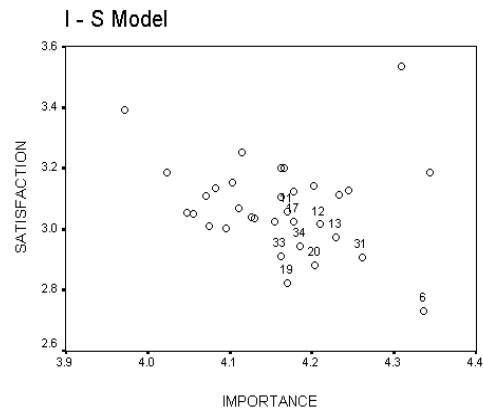


Figure 2.2 *I – S Model* (Quadrant 2 – To be Improved)

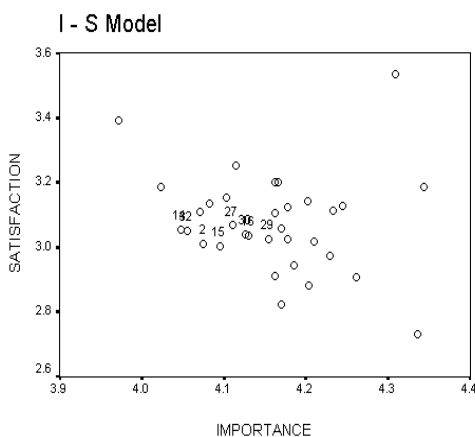


Figure 2.3 *I – S Model* (Quadrant 3 – Careless)

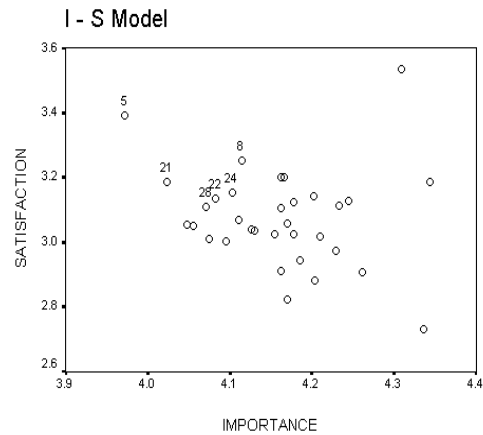


Figure 2.4 *I – S Model* (Quadrant 4 – Surplus)

22. Knowledge level and skills the librarians present when answering queries
24. Level of correctness in the services provided by the librarians
28. Level of courtesy offered by the librarians

Figure 2.1 – 2.4 show the average of perceived value (satisfaction) and expectation (importance) among the library users. There are 10 attributes in the “to be improved” quadrant which may be among the main concern of MMU library. Three quality attributes should be addressed by the management of MMU library in order to sustain their position as a quality service provider. The first of these attributes is “Promptness of the library staff in providing feedback towards complaints” (No.19). The second and third attributes are library staff’s having the users’ best interest at hearts (No.33) and library employees understanding the needs of their customers (No.34). Possible causes to this problem are due to shortage of professional and trained staff. Without knowledge and understanding of the needs of customers may cause dissatisfaction among users. Further investigation and concern in terms of customer needs and expectations should be the main agenda for continuous improvement.

4.5 Importance and Effectiveness of Complaint Management

Table 4 Importance and effectiveness of complaint management ranking table

| No. | Importance and Effectiveness of Complaint Management | Effectiveness (Scale: 1 – 5) (II) | Importance (Scale: 1 – 5) (I) | Gap Score (II – I) |
|-----|--|-----------------------------------|-------------------------------|--------------------|
| 1. | A system exists to ensure that customer complaints are resolved promptly and effectively | 3.2530 | 4.0514 | -0.7984 |
| 2. | Complaint data are tracked and used to initiate prompt corrective action to prevent the problem from recurring | 3.1739 | 3.9444 | -0.7705 |
| 3. | Effective complaint management will increase satisfaction and loyalty | 3.2925 | 4.0553 | -0.7628 |
| 4. | Complaints and customer concerns are resolved at first contact | 3.2134 | 3.9644 | -0.7510 |
| 5. | Adequate staff are available to maintain effective customer contact | 3.2095 | 3.9328 | -0.7233 |
| 6. | Suggestion box and complaint cards provided for library patrons to be able to channel their suggestion or complaints | 3.2253 | 3.9447 | -0.7194 |
| 7. | Customer – contact employees are empowered to make decisions to address customer concerns | 3.2292 | 3.9407 | -0.7187 |
| 8. | Objectives customers service standards have been derived from customer expectations (for example: timeliness, courtesy, efficiency, thoroughness and completeness) | 3.2530 | 3.9684 | -0.7154 |

| | | | | |
|-----|--|--------|--------|---------|
| 9. | Complaints from customers used as reference or benchmark as quality service provider | 3.3083 | 4.0119 | -0.7036 |
| 10. | Requirements for building relationships are identified and may include factors such as product knowledge, employee responsiveness and various customer contact methods | 3.2134 | 3.9091 | -0.6957 |
| 11. | Feedback is sought on the effectiveness of service | 3.2964 | 3.9802 | -0.6838 |
| 12. | A systematic approach exists to evaluate and improve service and customer relationships | 3.2925 | 3.9763 | -0.6838 |
| 13. | Feedback from customers and employees systematically used in the improvement process | 3.3202 | 3.9565 | -0.6363 |
| 14. | Procedures are in place and evaluated to ensure that customer contact is initiated to follow up on recent transitioning to build relationships | 3.2569 | 3.8893 | -0.6324 |
| 15. | Problem resolution priority setting is based on the potential cost impact of customer decisions to repurchase or recommend the service to others | 3.2609 | 3.8775 | -0.6166 |

Source: Adapted from Mohamed Zairi (2000,p.335)

Table 4 illustrates the comparison between effectiveness and importance of complaint management. The top five attributes stated as the highest negative value (*gap score*), are a system that exists to ensure that customer complaints are resolved promptly and effectively (-0.7984), complaint data are tracked and used to initiate prompt corrective action to prevent the problem from recurring (-0.7705), effective complaint management will increase satisfaction and loyalty (-0.7628), complaints and customer concerns are resolved at first contact (-0.7510) and adequate staff who are available to maintain effective customer contact (-0.7233). With this outcome, MMU library should implement a customer relationship management (CRM) system in handling all their customers' comments and complaints. According to Wang (2007), CRM concept and applications is one of the possible solutions to secure users' satisfaction while facing the challenges brought by proliferated information service channels, information explosion and users' higher expectations.

4.6 Overall Performance of The MMU Library Services

Table 5 Overall performance

| | Frequency | Percentage |
|------------------|------------------|-------------------|
| Very Unsatisfied | 14 | 5.5 |
| Unsatisfied | 35 | 13.8 |
| Average | 123 | 48.6 |
| Satisfied | 80 | 31.6 |
| Very Satisfied | 1 | 0.4 |
| <i>Total</i> | <i>253</i> | <i>100</i> |

Based on table 5, it is apparent that most of the respondents (48.6%) gave a score of 3 for this particular question followed by satisfied with a total of (32%) and unsatisfied (19.3%). Although unsatisfied is not stated as the highest among all the categories, but somehow quality service is still one of the most important aspect that needs to be given attention.

4.7 Correlation Test

Table 6 Correlation between customer complaint and customer satisfaction

| | | Satisfaction | Complaint |
|---------------------|---------------------|---------------------|------------------|
| Satisfaction | Pearson Correlation | 1 | -0.322** |
| | Sig.(2 – tailed) | . | 0.000 |
| | N | 252 | 251 |
| Complaint | Pearson Correlation | -0.322** | 1 |
| | Sig. (2 – tailed) | 0.000 | . |
| | N | 251 | 252 |

**Correlation is significant at the 0.01 level (2 – tailed)

Table 7 Correlation between effective complaint management and customer satisfaction

| | | Satisfaction | Effective Complaint Management |
|---------------------------------------|---------------------|---------------------|---------------------------------------|
| Satisfaction | Pearson Correlation | 1 | 0.223** |
| | Sig.(2 – tailed) | . | 0.000 |
| | N | 252 | 252 |
| Effective Complaint Management | Pearson Correlation | 0.223** | 1 |
| | Sig. (2 – tailed) | 0.000 | . |
| | N | 252 | 253 |

**Correlation is significant at the 0.01 level (2 – tailed)

Table 6 shows the results of the correlation analysis used to access the relationship between attribute of customer satisfaction and complaint intention. The results show that the correlation coefficient (r) obtained is only (-0.322) at the 1 per cent significance level, which indicates that the attribute of customer satisfaction and complaint intention have only an insignificant weak negative relationship. Whereas, in table 7, the value of $r = (+0.223)$ that significant at the 0.01 level (2-tailed) proved that there is slightly weak positive relationship between both variables. The results expose significant correlations between all the variables, which support that effective complaint management, may well lead to improved customer satisfaction.

5.0 CONCLUSION AND RECOMMENDATION

In conclusion, customer satisfaction plays an important role in every organization. Customer satisfaction plays a crucial role as it determines the quality in the service setting. In return, it will provide a competitive edge to any organization which is competing against its competitors.

Six sigma is designed to provide a structured and systematic procedure for organizations in their process improvement stage with the adoption of 5 well defined steps. This includes identification of problem (D), measure current performance or problem (M), analyze the process and validate root causes or defects (A), develop improvements, prioritize and validate optimal solution (I) and implement solution and control (C). The proposed framework (DMAIC), briefly illustrates the fundamental of applying six sigma in MMU library as shown in Table 8. Appropriately implemented, six sigma may be one of the important problem solution tools in handling customer complaints. From the initial stage of problem identification through customer complaint, sources of customer dissatisfaction can be identified for continuous improvement.

5.1 Proposed Recommendations Based on Six Sigma Model

The summary of actions shown in Table 8 is recommended.

Table 8 The proposed DMAIC problem solving method

| No | DMAIC | Details |
|----|----------------|---|
| 1 | <i>Define</i> | <ul style="list-style-type: none"> • Before possible solutions is recommended, we should define the problem in specific terms. Only then appropriate measurements or data should be collected. • Qualitative data such as customer complaint would be the best indicator to identify customer needs and wants. Voice of customers are then transformed and classified as sources of dissatisfaction or service failure. |
| 2 | <i>Measure</i> | <ul style="list-style-type: none"> • Determine the current performance and identify the potential causes. Once the problem has been identified or defined, it must be decided any additional measurement must be taken to quantify it. • Questionnaire was designed and used as the data gathering instrument based on the SERVQUAL model to understand and determine the perceived service needs and the expectation of target customers. • Based on the survey, the users are dissatisfied with the responsiveness dimension (<i>willingness and readiness of library staff to assist customers and provide prompt service</i>) and empathy (<i>understand the customers and knowing how to tend their needs</i>). |
| 3 | <i>Analyze</i> | <ul style="list-style-type: none"> • Data collected through measurement, will be the base of analysis. • Service provider should understand the root causes of variability which lead to poor service or service failures and prioritize them for improvement. |

-
- | | | |
|---|----------------|--|
| 4 | <i>Improve</i> | <ul style="list-style-type: none"> • Identify and see what the data are telling us. Some of the causes are promptness of the library staff in providing feedback towards complaints and needs; library employees do not understand the needs of their customers and having the users' best interest at heart. • Once root cause of the problem has been identified, we may recommend possible or potential solutions to fix it. • Statistical tests may be required to understand any relationship or interaction between variables. The following are some of the recommended solutions for continuous improvement: <ol style="list-style-type: none"> i) Problems can be solved by providing necessary training for each specialized skills and hiring more professional staff. ii) Effective communication between staff and students by organizing communication workshop frequently in which staff could be exposed and educated with the current skills needed and uptrend issues pertaining to customers' needs and satisfaction. The workshop should emphasize on issues such as courtesy, friendliness, readiness, responsiveness and etc. iii) Besides, MMU (Malacca) library should introduce or implement a systematic complaint handling system or in specific to have a Customer Relationship Management (CRM) system. By having a standardized complaint handling system, the voice of customers (VOC) can be identified for continuous improvement. A basic CRM system should allow library staff to post and link useful materials and information, allow users to make requests and comments to the system, and offer a bi – directional communication channel with their users (Wang, 2006). In addition, he commented that the data warehouse and data – mining technology may be used to incorporate various data, to extract meaningful pattern, and to profile individual users or some specific users. iv) To improve timeliness in delivering service, the library should employ a time based strategy (focus on radius time to accomplish). v) Key performance indicator (KPI) system and by having a standard operating procedure (SOP) could be the best solution to these. The KPI system would measure the performance of each staff based on timeliness in the service provided. At the end of each month, the KPI of each staff will be calculated by using an individual incentive plan. In this matter, staff will be motivated to perform in a timely manner. This would assist the library to achieve time reduction which relates to service deliver time, and hence increases productivity. |
| 5 | <i>Control</i> | <ul style="list-style-type: none"> • Continuous improvement and monitoring should be scheduled and updated. • MMU library should develop new complaint management procedures which comprise of systematic customer database to enhance better quality service and able to detect the wants and needs of its customers. |
-

Complaining gives management an opportunity both to remedy specific problems that are episodic and limited to the individual incident, and to correct systematic problems that affect many individuals throughout the firm's customer base (Huppertz, 2007). Therefore, by implementing a standard service recovery through in – depth analysis of customer complaint should be the main priority of MMU library. Service recovery is not only to correct specific instances of failure, but also to improve the service delivery system such that future instances of failure are precluded, customers' overall perceptions of service quality are enhanced, and long – term relationships with loyal customers are assured (Brown, Cowles and Tuten, 1996). Effective service recovery also leads to enhanced perceptions of the quality of products and services enhanced perceptions of the firm's competence and a favorable image of perceived quality and value (Kelly and Devis 1994; Technical Assistance Research Programs Institute, 1985; Zemke and Bell, 1990).

However in this research, the users believed that the MMU library did provide the general necessities with an inviting environment and the availability of services being provided by the library. Quality service and customer satisfaction are important aspects that need to be given attention because customers are the main elements and determinant to be considered in the library. If the customer is satisfied with the services offered, it means that the service that is being provided is up to the expectation of the customer. This in return brings more profits to MMU, positively impacting the organizational image and achieves the vision of the university which is to become a world class research university.

REFERENCES

- Altman, E. & P. Hernon. 1998. Service Quality and Customer Satisfaction Do Matter. *American Libraries*. 29(7): 52-55.
- Antony, J. 2006. Six Sigma for Service Processes. *Business Process Management Journal*. 12(2): 234-248.
- Antony, J., F. J. Antony & M. Kmar. 2007. Six Sigma in Service Organizations: Benefits, Challenges and Difficulties, Common Myths, Empirical Observations and Success Factors. *International Journal of Quality & Reliability Management*. 24(3): 294-311.
- Baca, R. D. 2006. Dimensions of Service Quality of the University of Arizona. *Thesis*
- Brown, S. W., D. L. Cowles & T. L. Tuten. 1996. Service Recovery: Tts Value and Limitations as a Retail Strategy. *International Journal of Service Industry Management*. 7(5): 32-46.
- Chen, S. H., C. C. Yang, W. T. Lin & T. M. Yeh. 2007. Service Quality Attributes Determine Improvement Priority. *The TQM Magazine*. 19(2): 162-175.
- Clemmer, J. Customer Satisfaction is a Reflection of Employee Satisfaction. (Online). http://www.clemmer.net/articles/article_121.aspx. (23 April 2008)
- Cullen, R. 2001. Perspectives on User Satisfaction Surveys. *Library Trends*. 49(4): 662 -686
- Dolinsky, A. L. 1994. A Consumer Complaint Framework with Resulting Strategies: An Application to Higher Education. *Journal of Service Marketing*. 8(3): 27-39.
- Eccles, G. & P. Durand. 1998. Complaining Customers, Service Recovery and Continuous Improvement. *Managing Service Quality*. 8(1): 68-71.
- Fornel, C. Customer Satisfaction Key to Reclaiming Economic Dominance. (Online). <http://www.cfgroup.com/resources/articles/MFJanFeb06.pdf>. (23 April 2008)

- Friman, M. & B. Edvardsson. 2003. A Content Analysis of Complaints and Complements. *Managing Service Quality*. 13(1): 20-26.
- Gee, R., G. Coate & M. Nicholson. 2008. Understanding and Profitably Managing Customer Loyalty. *Marketing Intelligence and Planning*. 26(4): 359-374.
- Hensley, R. L. & K. Dobie. 2005. Assessing Readiness for Six Sigma in a Service Setting. *Managing Service Quality*. 15(1): 82-101.
- Huppertz, J. W. 2007. Firms' Complaint Handling Policies and Consumer Complaint Voicing. *Journal of Consumer Marketing*. 24(7): 428-437.
- Johnston, R. & S. Michel. 2008. Three Outcomes of Service Recovery; Customer recovery, Process Recovery and Employee Recovery. *International Journal of Operations and Productions Management*. 28(1): 79-99.
- Kaur, K. & P. Mohamad. 2006. Quality Management Service at the University of Malaya University. *Library Management*. 27(4): 249-256.
- Kumi, S. & J. Morrow. (???)?. Improving Self Service the Six Sigma Way at Newcastle University Library. *Program: Electronic Library and Information Systems*. 40(2): 123-136.
- Miao, H. & M. W. Bassman. 2007. Embracing Customer Service in Libraries. *Library Management*. 28(1/2): 53-61.
- Mohamed Zairi. 2000. Managing Customer Dissatisfaction through Effective Complaints Management Systems. *The TQM Magazine*. 12(1): 331-337.
- Multimedia University. (Online). <http://www.mmu.edu.my/Library.htm>. (23 April 2008)
- Ndubisi, N. O. & Y. L. Tam. 2005. Complaint Behaviour of Malaysian Consumers. *Management Research News*. 29(1/2): 65-76.
- Nunnally, J. C. 1978. *Psychometric Theory* (2nd.ed) New York: Mc Graw-Hill.
- Nyer, P. U. 2000. An Investigation into Whether Complaining Can Cause Increased Consumer Satisfaction. *Journal of Consumer Marketing*. 17(1): 9-19.
- Oh, D. G. 2006. Complaining Intentions and their Relationships to Complaining Behavior of Academic Library Users in South Korea. *Library Management*. 27(3): 168-189.
- Preston, J. B., J. Felice & S. Marshall. 2006. Building Better Customer Relationships: Case Studies from Malta and the UK. *Library management*. 27(6/7): 430-445.
- Sahu, A. K. 2007. Measuring Service Quality in an Academic Library: An Indian Case Study. *Library Review*. 56(3): 234-243.
- Sakthivel, P. B., G. Rajendran & R. Raju. 2005. TQM Implementation and Student's Satisfaction of Academic Performance. *The TQM Magazine*. 17(6): 573-589.
- Schelmatic, T. E. Gauging Customer Satisfaction Accurately. Technology Marketing Corporation. (Online). <http://callcenterinfo.tmcnet.com/analysis/articles/13701-gauging-customer-satisfaction-accurately.htm>. (23 April 2008)
- Seth, N. & S. G. Deshmukh. 2005. Service Quality Models: A Review. *International Journal of Quality & Reliability Management*. 22(9): 913-949.
- Sureshchandar, G. S, C. Rajendran & R. N. Anantharaman, 2002. The Relationship between Service Quality and Customer Satisfaction – A Factor Specific Approach. *Journal of Service Marketing*. 16(4): 363-379.
- Thompson, A. Customer Satisfaction in 7 Steps. (Online). <http://www.sitepoint.com/article/satisfaction-7-steps>. (23 April 2008)
- Vos, J. F. J., G. B. Huitema & Ros, E.de.L. 2008. How Organizations can Learn from Complaints. *The TQM Journal*. 20(1): 8-17.
- Wang, H. 2006. From "user" to "customer": TQM in Academic Libraries?. *Library Management*. 27(9): 606-620.
- Wang, M. Y. 2007. Introducing CRM into an Academic Library. *Library Management*. 28(6/7): 281-291.
- Yang, C. C. 2003. Improvement Actions Based on the Customers' Satisfaction Survey. *TQM & Business Excellence* 14(8): 919-930.