CHAPTER FOUR

RESEARCH FINDINGS

This chapter presents the results of the study conducted. The basic demographics of the respondents will be discussed first. This is followed by the findings on the various dimensions of service quality extracted from the modified 19-items SERVQUAL instrument using factor analysis. Results of the unweighted and weighted average SERVQUAL scores will then be discussed. Finally, the relative importance of each dimension contributing to the overall quality of service of UMBC will be presented and discussed.

In the data analyses, the scale values for negatively worded statements, items 11, 16 to 18 of the expectations and perceptions statements, were reversed prior to the data analyses by recoding the scale values for highest (i.e. 7) equals to lowest (i.e. 1), second highest (i.e. 6) to second lowest (i.e. 2) and so on.

Profile of Respondents

A total of 340 questionnaires were distributed to five UMBC branches within the Kuala Lumpur area and various Head Office departments. Out of the questionnaires distributed, 171 or 50.0% questionnaires were returned but 2 of the questionnaires could not be used for the data analysis.

The respondents comprised 57.2% males and 42.8% females. Their racial composition were 54.4% Malays; 36.1% Chinese; 8.3% Indians; and 1.2% others. The average age of the respondents was between the age of 25 to 34 years and 68.0% were married. In terms of educational level, 38.1% of the respondents have at least University education while 61.9% have pre-university education and below.

The respondents were 52.1% employed in the category of Manager, Officer and Proprietor, 13.0% were Professionals and 28.4% were clerical staff. The respondents were 66.0% employed by large locally-owned companies while 11.7% were employed by small and medium sized locally-owned companies. In terms of personal salary, 35.3% of the respondents have salary below RM1,500 per month, while 64.7% earned more than RM1,500. Among the respondents, 68.0% were married and 55.4% had spouses who were working. In terms of gross family income, 97% of the married respondents with working spouses earned above RM1,500 per month. Table 4.1 summarises the profile of the respondents.

Table 4.1: Characteristics of Respondents

Characteristics	No. of Respondents	Percentage
SEX		
Male	97	57.4
Female	72	42.6
MARITAL STATUS		
Married	115	68.0
Single	52	30.8
Divorced	2	1.2
RACE		
Malay	92	54.4
Chinese	61	36.1
Indian	14	8.3
Others	2	1.2
AGE		
18 - 24 years	20	11.8
25 - 34 years	87	51.5
35 to 44 years	46	27.2
>45 years	16	8.5
EDUCATIONAL LEVEL		
SRP	3	1.8
SPM	50	29.8
Pre-University	51	30.4
University/Postgraduate	64	38.1
Postgraduate	8	5.1
OCCUPATION		
Professional	22	13.0
Manager/Officer/Proprietor	88	52.1
Clerical	48	28.4
Others	11	6.5
EMPLOYER		
Government	11	6.8
Large (local)	107	66.0
Small and Medium (local)	19	11.8
Multinational	14	8.6
Others	11	6.8
PERSONAL SALARY		
< RM750	7	4.1
RM750 - RM1,499	52	30.8
RM1,500 - RM2,499	43	25.4
RM2,500 - RM3,499	30	17.8
RM3,500 - RM4,999	11	6.5
> RM5,000	21	12.4

* No. of Respondents do not add up to 169 due to Missing Values.

Among the respondents, 92.9% had used the services of UMBC less than 3 months ago. Only 7.1% of the respondents had used UMBC's services 3 months ago or more. In terms of how often the respondents go to the bank, 26.6% of the respondents visit the bank daily; 43.2% weekly; 14.8% fortnightly; and 14.8% monthly.

Last Used Service	No. of Respondents	Percentage
< 3 months ago	157	92.9%
3 months or more	12	7.1%

Frequency of Visits	No. of Respondents	Percentage
Daily	45	26.6%
Weekly	73	43.2%
Fortnightly	25	14.8%
Monthly	25	14.8%
Annually	1	0.6%

The type of the services used at UMBC by the respondents were as follows:

Current Account	55.0%[‡]
Savings Account	84.6%
Fixed Deposit	20.1%
Transfer of Funds	25.4%
Cheque Encashment	22.5%
Purchase of Bank Drafts	37.3%
ATM	60.9%
Loans	39.1%
Others	4.1%

‡ Does not add up to 100% due to multiple answers.

Dimensions of Service Quality

This section identifies the dimensions of service quality as perceived by UMBC customers using the 19-items SERVQUAL instrument. The perception less expectation gap scores for these items were factor analysed to identify the dimensions of service quality by using the principal component analysis and the factors were orthogonally rotated using the varimax approach. The varimax approach provides a clearer separation of factors and eliminates collinearity. In contrast, Parasuraman et al. (1988a, 1991) used oblique rotation for extraction of the factors.

Only four factors were extracted after 5 iterations and the cumulative percentage of variance for the four factors were 56.8% of the total variance which was considered satisfactory. According to Hair et al. (1992), for social science studies, where information is often less precise, it is not uncommon to consider a solution that accounts for about 60% of the total variance, and in some instances even less, as a satisfactory solution. The four factors were extracted based on latent root criterion whereby factors with eigenvalue greater than one were considered significant. The rationale for the eigenvalue criterion is that any individual factor should account for at least the variance of a single variable if it is to be retained for interpretation. However, the eigenvalue approach is probably most reliable when the number of

variables is between 20 and 50. In instances where the number of variables is less than 20, there is a tendency for this method to extract a conservative number of factors (Hair et al. 1992). This probably explains for four factors being extracted from the SERVQUAL instrument used which had been modified to have only 19-items instead of the 22-items in the original SERVQUAL instrument used in the study by Parasuraman et al.(1988a). The a priori criterion was also conducted to extract the five factors previously identified in the study done by Parasuraman et al. (1988a).

The four factors extracted and the variance accounting for the four variables are listed in Table 4.2. SERV1 to SERV19 is the perception minus expectation score of item 1 to item 19 of the SERVQUAL instrument. Appendix 3 shows the factor analysis extraction results and the scree plot.

Table 4.2

Dimensions Extracted Eigenvalue Greater Than One

Variable	Commu-nality	Factor	Eigen-Value	Pct of Variance	Cum.Percent
SERV1	.63413	1	5.82492	30.7	30.7
SERV2	.59569	2	2.15272	11.3	42.0
SERV3	.57016	3	1.62446	8.5	50.5
SERV4	.50832	4	1.19833	6.3	56.8
SERV5	.51206				
SERV6	.65691				
SERV7	.50359				
SERV8	.58511				
SERV9	.56484				
SERV10	.41980				
SERV11	.52056				
SERV12	.69433				
SERV13	.70559				
SERV14	.54214				
SERV15	.49508				
SERV16	.54330				
SERV17	.58851				
SERV18	.59389				
SERV19	.56606				

According to Hair et al. (1992), factor loadings greater than +0.30 are considered significant. Loadings of +0.40 are considered as more important and loadings of +0.50 very significant. For this study, factor loadings of more than +0.40 are considered for inclusion into the factors. The factor loadings for the four factors extracted after the varimax rotations are shown in Table 4.3.

Table 4.3

Factor Loadings Matrix Following 5 Varimax Rotations Using Latent Root Criterion

Items	Factor 1	Factor 2	Factor 3	Factor 4
SERV1	.76915#	.18121	-.00471	-.15798
SERV2	.76515#	.06007	.07837	.02198
SERV3	.74684#	.8920	.06549	.01173
SERV4	.64490#	.16903	.24755	-.05074
SERV5	.52288#	.04041	.05073	.48419#
SERV6	.75101#	.09225	.20488	.20591
SERV7	.63801#	.13466	.04578	.27622
SERV8	.65412#	.22499	.16758	.28022
SERV9	.06798	.71259#	-.01286	-.22862
SERV10	.22262	.59067#	.14150	.03637
SERV11	.30712	.59199#	.14419	-.23450
SERV12	.09069	.01018	.80795#	.18223
SERV13	.07080	.08660	.82666#	.10046
SERV14	.33199	.13556	.64113#	-.04994
SERV15	.48628#	.25415	.31972	-.30298
SERV16	.00803	.73684#	.00889	.01520
SERV17	.15989	.68978#	-.06635	.28766
SERV18	.11426	.71230#	.18729	.19593
SERV19	.07878	.03111	.18165	.72518#

Items considered for inclusion into the factors

Table 4.4 shows the factor loadings for the five factors extracted after 10 iterations using the a priori criterion.

Table 4.4

Factor Loadings Matrix Following 10 Varimax Rotation Using A Priori Criterion

Items	Factor 1	Factor 2	Factor 3	Factor4	Factor 5
SERV1	.77747#	.18835	-.02930	.06664	-.02581
SERV2	.75297#	.05343	.05916	.12871	.12768
SERV3	.70097#	.04536	.06951	.28547	.00817
SERV4	.67271#	.19303	.21474	-.01357	.11705
SERV5	.44724#	.01739	.03710	.21520	.55380#
SERV6	.69836#	.06075	.19704	.25200	.25632
SERV7	.49154#	.01275	.09366	.63409#	.06209
SERV8	.51430#	.10854	.21129	.62127#	.08602
SERV9	.08042	.70103#	-.00914	.11443	-.24376
SERV10	.24019	.61303#	.11522	.00142	.16280
SERV11	.38944	.65340#	.09830	-.18100	-.01165
SERV12	.06528	-.01096	.81779#	.10345	.13785
SERV13	.06065	.07204	.83445#	.07306	.06598
SERV14	.35108	.14057	.63156#	.01622	.00339
SERV15	.54165#	.27643	.29852	-.04402	-.19031
SERV16	.01917	.75100	.00765	.02698	.09118
SERV17	.03204	.58838#	.02331	.55649#	.08481
SERV18	.02458	.63624#	.21955	.43191#	.04406
SERV19	.02164	.04995	.15019	.00664	.86702#

Items considered for inclusion into the factors

In Table 4.4, the factor analysis using the a priori criterion, SERV7 and SERV8, overlapped in Factor 1 and Factor 4 while SERV17 and SERV18 overlapped in Factor 2 and Factor 4. This probably explains why Factor 4, comprising SERV7, SERV8, SERV17 and SERV18, was not extracted when the latent root criterion was used thus resulting in only four factors being extracted.

In the study by Parasuraman et al. (1988a), the results of the factor analyses consistently assigned specific items to each dimension as shown in Table 4.5.

Table 4.5

Items Assigned to Each Dimension of Service Quality In Parasuraman et al. Study

Dimension	No. of Items	Items
Tangibles	4	SERV1 to SERV4
Reliability	5	SERV5 to SERV9
Responsiveness	4	SERV10 to SERV13
Assurance	4	SERV14 to SERV17
Empathy	5	SERV18 to SERV22

However, in this study it was found that there was one factor less and the items did not fall into the dimension as shown in the study by Parasuraman et al. (1988a). Table 4.6 shows the items assigned to each of the dimensions in this study.

Table 4.6

Items Assigned to the Dimensions Extracted

Dimensions	No. of Items	Items
Factor 1	9	SERV1 to SERV8; SERV15
Factor 2	6	SERV9 to SERV11; SERV16 to SERV18
Factor 3	3	SERV12 to SERV14
Factor 4	1	SERV19

Factor 1 appeared to be a combination of the tangibles and reliability dimensions. SERV1 to SERV3 were statements concerning physical facilities, up-to-date equipment and well-dressed employees which were supposed to be tangibles dimensions. SERV4 through SERV7, with the exception of SERV5, were statements on UMBC being sympathetic and reassuring to customers' problems, providing services at the time promised, and keeping accurate records. SERV5, which pertained to the bank being dependable on its services, overlapped between this dimension and Factor 4 which is the empathy dimension. However, since SERV5 had a higher factor loading under the reliability dimension, it was more appropriate for the item to be placed under reliability. SERV8 concerned informing customers exactly when its services will be performed and, therefore, could be reasonably viewed as a reliability statement. SERV15 was about the bank's employees getting adequate support from the bank and was also perceived as a reliability factor. This factor was named relaibility.

Lim (1992) in her study had 7 items which correspond to SERV1, SERV2, SERV4, SERV6 to SERV8, and SERV15 loaded onto Factor 1 which she named as Technical Service.

Factor 2 was interpreted to be the responsiveness dimension comprising three items, SERV9, SERV10 and SERV11, which concerned prompt service, willingness to help customers, and responding to customers requests promptly.

SERV16, SERV17 and SERV18, which were supposed to be items under the empathy dimension in the study by Parasuraman et al. (1988a), also loaded onto the responsiveness dimension. These items, SERV16, SERV17 and SERV18, pertained to giving customers individual attention, UMBC's employees knowing their customers' needs, and UMBC having the customers' best interest at heart, and could reasonably be interpreted as responsiveness statements.

Lim (1992) in her study had the same 6 items loaded onto Factor 2 which she named as Personal Attention and Responsiveness.

Factor 3, the assurance dimension, only had three items, SERV12, SERV13 and SERV14, as compared to the four items extracted in Parasuraman et al. (1988a) study. SERV12, SERV13, and SERV14 were statements concerning trust, feeling safe and polite employees. The fourth assurance item in Parasuraman's study, SERV15, concerning the bank providing adequate support to their employees to do their job well, was construed as a reliability statement.

Lim's (1992) study differed in that item coresponding to SERV14 was not loaded onto Factor 3. She interpreted items corresponding to SERV12 and SERV13 which loaded onto Factor 3 as relating to the customers' sense of security in dealing with the service employees and she, therefore,

named Factor 3 as Security.

The last factor, Factor 4, had only one item, SERV19, loaded onto it as compared to the four items in the empathy dimension in the study by Parasuraman et al. (1988a). SERV19 is a statement whereby respondents feel that UMBC should provide convenient operating hours to all its customers. Parasuraman et al. (1988a) had named the factor, which included SERV19, as empathy. Although it would appear that the item related more to convenience, the factor was named as empathy since it dealt with the respondents' feelings about whether the Bank should provide convenient operating hours to all its customers. Furthermore, it would appear that this factor, being a unidimensional factor, should not be included as one of the dimensions of service quality. However, the factor loading for SERV19 was high at 0.72518 and Factor 4 accounted for 6.3% out of the total variance of 56.8% for the four factors.

Factor 4 in Lim's (1992) study differed entirely from the results of the factor analysis in this study. Items corresponding to SERV3 and SERV14 loaded onto Factor 4, the last factor extracted in her study. Factor 4 was named as Appearance and Courtesy.

Lim's (1992) study had dropped 2 items corresponding to SERV5 and SERV19 which had factor loadings of less than

0.5. However, the factor loadings were relatively high with 0.47165 for the item corresponding to SERV5 and 0.41121 for the item corresponding to SERV19. If these 2 items had been included in the results, the item corresponding to SERV5 would have loaded onto Factor 1 and the item corresponding to SERV19 would have loaded onto Factor 3.

The results of the factor analysis indicate that the 19 items from the SERVQUAL instrument did not replicate the results of Parasuraman et al (1988a) study. The items did not load onto the five dimensions identified in the Parasuraman et al. (1988a) study. Furthermore, only four factors were extracted from the factor analysis. On the other hand, although the results were not identical to the study done by Lim (1992), Factors 1, 2 and 3 closely matched the results obtained in the study by Lim (1992). As suggested by previous studies by Carman (1990) and Cronin and Taylor (1992), rewording of the statements may have been necessary to make the SERVQUAL instrument more suitable for the type of services being investigated.

Reliability of Dimension Extracted

The four dimensions with the items assigned to each dimension were subjected to a test for reliability. Reliability can be broadly defined as the degree to which

scales are free from error and therefore yield consistent results. In this study, the internal consistency method was used to assess the reliability of the scales and Cronbach's alpha scores were calculated by computer. Nunnally's guideline (Davis and Cosenza 1988) on the necessary value of alpha of a scale in an exploratory research ranges between 0.5 to 0.6. In this study, a minimum alpha value of 0.5 was adopted.

The reliability scores for the empathy dimension could not be determined as there was only one item in this dimension. The Cronbach's alpha score for the other three dimensions, reliability, responsiveness and assurance, were high at more than 0.70. The reliability coefficient of both the expectations statements and perceptions statements were also high at 0.8048 and 0.8749, respectively, while the reliability of the scale for SERV1 to SERV19 was also high at 0.8690. Table 4.7 shows the alpha scores for the dimensions extracted.

Table 4.7

Cronbach's Alpha Scores for the Dimensions Extracted

Dimension	No. of Items	Reliability Coefficient	Items
Reliability	9	.8726	SERV1 SERV2 SERV3 SERV4 SERV5 SERV6 SERV7 SERV8 SERV15
Responsiveness	6	.7883	SERV9 SERV10 SERV11 SERV16 SERV17 SERV18
Assurance	3	.7115	SERV12 SERV13 SERV14
Empathy	1	Not Determined	SERV19

Service Quality Scores

This section presents the results for the SERVQUAL scores, both unweighted and weighted, for the four dimensions of service quality extracted from this study. The 19 statements of SERVQUAL in both the expectation and perception statements have been grouped into the four basic dimensions as follows:

Dimensions	Statements
Reliability	Statements 1 to 8; 15
Responsiveness	Statements 9 to 11; 16 to 18
Assurance	Statements 12 to 14
Empathy	Statement 19

SERVQUAL scores for the four dimensions were calculated based on the statements in the above grouping. A reliability test of the scale was computed for each of the statements that constitute a dimension and for the total scale.

Table 4.8 shows the result of the unweighted SERVQUAL scores.

Table 4.8

Unweighted SERVQUAL Scores

	N	Alpha	Mean	Std Dev.
Av. SERVQUAL	144	.8690	-0.98	1.02
Reliability	155	.8726	-1.76	1.24
Responsiveness	157	.7883	-0.51	1.57
Assurance	166	.7115	-0.89	1.23
Empathy	167	**	-0.69	2.15

* N is the number of valid observations after accounting for Missing Values.

** Alpha cannot be determined since this dimension has only 1 item.

The average SERVQUAL score which is also the unweighted average of the SERVQUAL scores has a mean of -0.98 which would indicate that the respondents expectations of the banking services were not met by UMBC. The SERVQUAL scores for the four dimensions, were all negative scores implying that there was a gap between the respondents' expectations of what the banking services should be and their perceptions of the service quality offered by UMBC. The service quality gap for the reliability dimension was the highest with a mean of -1.76 while the lowest gap was the responsiveness dimension which had a mean of -0.51. The reliability scores for the four dimensions were consistently high, more than the acceptable alpha value of 0.50, indicating that there was high internal consistency among items within each dimension.

The levels of expectation and perception in respect the four dimensions of service quality were also examined. This was to show the respondents' level of expectation in regard to quality service as compared to their perception on the service provided by UMBC. Table 4.9 and 4.10 show the expectations score and perception score, respectively.

Table 4.9

Expectations Scores

	N	Alpha	Mean	Std Dev
Average Expectations	152	.8048	5.60	0.73
Reliability	159	.6541	6.28	0.66
Responsive	163	.5771	4.78	1.37
Assurance	168	.7244	5.98	1.03
Empathy	167	.6558	5.30	1.62

* N is the number of valid observations after accounting for Missing Values.

Table 4.10

Perception Scores

	N	Alpha	Mean	Std Dev
Average Perceptions	155	.8749	4.63	0.78
Reliability	164	.8237	4.51	1.07
Responsive	161	.6943	4.26	1.03
Assurance	167	.7271	5.10	1.07
Empathy	169	.5288	4.62	1.56

* N is the number of valid observations after accounting for the Missing Values.

The level of expectation was highest for reliability and lowest for empathy. Meanwhile the perception of service quality for UMBC was highest for assurance and lowest for responsiveness. In this study, the alpha value for the expectation and perception statements for along the four dimensions of service quality were greater than 0.5 which according to Nunnally would suffice for basic research work.

Section III of the questionnaire had asked respondents to allocate a total of 100 points across the five dimensions. Table 4.11 shows the mean number of points allocated to each of the dimensions.

Table 4.11

Weightage of the SERVQUAL Dimensions

Dimension	Mean No. of Points Allocated
Tangibles	19
Reliability	21
Responsiveness	21
Assurance	21
Empathy	18
Total Points	100

The results showed that the respondents rated reliability, responsiveness and assurance dimensions as equally important in determining quality of service. The respondents chose empathy as the least important. While

Lim's (1992) study did not compute the weightage of service quality dimensions, the study by Parasuraman (1988a) differed from this study, whereby his study found reliability to be the most important and tangibles the least important among the five dimensions of service quality. The results of this study was reasonable since in providing banking services a bank must be reliable to deliver its services at the time promised, provide prompt service, and give customers the assurance that they are in safe `hands'.

Table 4.12 below shows the weighted service quality scores.

Table 4.12

Weighted SERVQUAL Scores

	N	Mean	Std.Dev.
Weighted SERVQUAL	142	-0.21	0.23
Reliability	153	-0.38	0.31
Responsiveness	154	-0.12	0.36
Assurance	163	-0.19	0.28
Empathy	163	-1.15	0.43

* N is the number of valid observations after accounting for Missing Values.

The weighted SERVQUAL score took into account the relative weights assigned by the respondents when they allocated 100 points to the five dimensions, without taking into consideration the relative weight assigned to the

tangibles dimension. The weighted SERVQUAL score, with a service quality gap of -0.21, was lower than the unweighted SERVQUAL score. The service quality gaps in respect of the four dimensions were similar to the unweighted SERVQUAL. The reliability dimension had the highest gap with a mean score of -0.38, followed by assurance, empathy, and responsiveness which had the lowest gap of -0.12.

Analysis of Demographic Variables with SERVQUAL Scores

SERVQUAL scores represent the gap between customers' expectations and perceptions. Using Kruskall-Wallis test statistics, the study examined whether significant differences existed between the various SERVQUAL scores and the demographic variables. These differences could be useful to UMBC to target at the different groups of customers in seeking to improve quality of service.

A significance level of not more than 5% was used to test the significant difference in means of seven demographic variables, namely sex, age, marital status, ethnic group, educational level, occupation and salary (please refer to Apendix 4). Although the results showed that there were significance differences in educational level, occupation and salary to the unweighted and weighted SERVQUAL scores, a general pattern could not be established to generalise the findings. However, in respect of

occupation, the highest SERVQUAL scores were made by those in the clerical category of employment. For personal salary, respondents having salary of less than RM750 consistently scored highest while those earning between RM3,500 to RM4,999 consistently scored lowest (please refer to Appendix 4.

Table 4.13 gives a summary of the findings. For detailed results please refer to Appendix 4.

Table 4.13

Kruskal Wallis 1-Way ANOVA on Demographic Variables

SERVQUAL Scores	Sex	Age	Marital Status	Ethnic	Edu.	Occup.	Salary
Average SERVQUAL	X	X	X	X	S	S	S
Weighted SERVQUAL	X	X	X	X	S	S	S
Reliability	X	X	X	X	S	S	S
Responsive	X	S	S	X	S	S	S
Assurance	X	S	X	X	S	X	X
Empathy	X	X	X	X	X	X	X

Notes:
1. `X' indicates no significance difference at 5% significance level.
2. `S' indicates probability greater than chi-square for the Kruskal-Wallis test.

Further Analysis of the General Variables

A frequency table of several variables such as the rating on the level of service of UMBC (rate), usage of UMBC facilities within the next one year (use), the quality of UMBC's services (qual), satisfaction level on the services of UMBC (satis), whether respondents would recommend their friends to UMBC based on the services received (recom), whether respondents encountered any problems recently (pro), and whether respondents were satisfied with the way UMBC resolved their problems (sat) was conducted to independently analyse data obtained from Section IV of the questionnaire.

Seventy-eight percent (78%) of the respondents rated the service level of UMBC as satisfactory and better. About 33% of the respondents indicated that they will at least frequently use the services of UMBC within the year. About 52% of the respondents rated the overall quality of UMBC's services as slightly good or better. About 55% of the respondents were slightly satisfied or more with the services of UMBC. Only 67.9% indicated that they would recommend UMBC to their friends. Among the responents 36.3% encountered problems with UMBC recently and only 14.4% were satisfied with how their problems were resolved.

Table 4.14 summarises the results of the test.

Table 4.14

Frequencies Table For General Variables

Variables	Frequency (%)
Rating on level of Service of UMBC (RATE)	
Excellent	2.4
Good	20.4
Satisfactory	55.7
Fair	15.6
Poor	6.0
Usage of UMBC Facilities within the next 1 year (USE)	
Infrequent	2.4
Slightly Infrequent	7.9
Neutral	26.7
Slightly Frequent	30.3
Frequent	22.4
Very Frequent	10.3
Quality of UMBC's Services (QUAL)	
Very Poor	1.8
Poor	4.8
Slightly Poor	10.3
Neutral	31.5
Slightly Good	27.9
Very Good	19.4
Excellent	4.2
Satisfaction Level on UMBC's Services (SATIS)	
Very Dissatisfied	1.8
Dissatisfied	4.2
Slightly Dissatisfied	7.9
Neutral	30.9
Slightly Satisfied	30.9
Satisfied	20.6
Very Satisfied	3.6
Recommend friends to UMBC (RECOM)	
Yes	67.9
No	32.1
Encountered problems recently (PRO)	
Yes	36.3
No	63.7
Satisfied with how UMBC solved problems encountered (SAT)	
Yes	14.4
No	21.6
Not Applicable	64.1

Relative Importance of the SERVQUAL Dimensions

Respondents were asked to rank the most important, second most important and the least important dimension when evaluating service quality. Table 4.15 shows the results of the ranking of the dimensions.

Table 4.15

Ranking of Dimensions

Dimensions	Most Important	2nd Most Important	Least Important
Tangibles	17.9%	8.8%	38.7%
Reliability	22.9%	25.0%	7.7%
Responsive	25.7%	35.1%	4.2%
Assurance	25.0%	24.3%	7.0%
Empathy	8.6%	6.8%	42.3%

The results show that 25.7% of the respondents ranked responsiveness as the most important dimension as compared to 25.0% who ranked assurance as the most important; reliability 22.9%; tangibles 17.9%; and empathy 8.6%.

Responsiveness (35.1%) was also ranked as the second most important dimension followed by reliability (25%), assurance (24.3%), tangibles (8.8%), and empathy (6.8%).

Empathy (42.3%) was ranked as the least important dimension, followed by tangibles (38.7%), reliability (7.7%), assurance (7.0%), and responsiveness (4.0%).

The results clearly indicate that the single most important feature of service quality for UMBC is responsiveness. The reliability and assurance dimensions could be equally important in improving the quality of service in UMBC. Empathy which deals with relationships with customers is now the least important factor in determining service quality.

Importance of the Five Dimensions on Overall Service Quality

Parasuraman et al. (1988a) suggests one potential application of SERVQUAL is to determine the relative importance of the five dimensions in influencing customers' overall quality perceptions. An approach for doing this is to regress the overall quality perceptions scores on the SERVQUAL scores for the individual dimensions. Multiple regression analysis is a statistical technique that can be used to analyse the relationship between a single dependent (criterion) variable, in this case overall service quality, and several independent (predictor) variables. The dependent variable used was the overall quality rating of the firm evaluated. The overall quality was obtained in response to a question asked customers to provide an overall rating of the firm ranging from `Poor' to `Excellent' on a scale of `1' to `4'.

Overall service quality in this study refers to the rating of service quality by respondents ranging from `Very Poor' to `Excellent' on a scale of `1' to `7'. Stepwise regression was used to examine the relative importance of the four dimensions of service quality extracted in this study in determining the service quality of UMBC. A significance level of 0.05 was used. The model to be tested was:

$$Y = ax_1 + bx_2 + cx_3 + dx_4 + fx_5 + gx_6 + hx_7\ jx_8 + e$$

where Y = Overall Quality
x_1 = Reliability
x_2 = Responsiveness
x_3 = Assurance
x_4 = Empathy
x_5 = Age
x_6 = Education Level
x_7 = Occupation
x_8 = Salary
e = Constant

Results of the stepwise regression are shown in Appendix 5.

The first dimension to enter the regression equation was the reliability dimension followed by assurance and responsiveness. Although the results of the regression differed from what the respondents had ranked as the most important, the second most important and least important dimensions of service quality as per Table 4.15, the results of the regression analysis were in agreement with the weightage given to each of the service quality dimensions in Table 4.11.

Results of the regression analysis are shown in Table 14.16.

Table 4.16

Relative Importance of the Dimensions of Overall Service Quality

Adjusted R^2 = 0.28015

Variables	Parameter Estimate	Sig T ($p<0.05$)
Reliability	0.2440	0.0044
Assurance	0.2602	0.0026
Responsiveness	0.1767	0.0063
(Constant)	5.3068	0.0000

The regression analysis showed that only three of the four dimensions were important in determining the overall service quality of UMBC. The partial correlation of reliability at 0.2440 is highest in terms of absolute value as compared to the other variables in the equation. The regression equation is statistically significant at the alpha value of 0.05 as indicated by the large F ratio of 18.90255 with three degree of freedom for the numerator and 135 degree of freedom for the denominator. Reliability alone explained for 18.44% of the variation in the level of overall service quality. The strength of association between the reliability dimension and the overall quality was the highest.

The next independent variable that entered the equation was assurance. Its partial correlation was 0.2602. The inclusion of the assurance dimension improved the overall quality to 24.46%. The last variable to enter the equation was responsiveness. With the inclusion of responsiveness the adjusted R square improved further to 0.2802, which meant the above independent variables explained for 28.02% of the variance in Y. This indicated that there are other variables that had not been included in the equation that could explain for the variation in overall quality. The regression analysis terminated after step three as the remaining variables, empathy, age, education level, occupation, and salary, were not statistically significant at the 0.05 level and could not be included in the equation. Tangibles had been excluded in the analysis since only four factors were extracted in this study and the variables under tangibles had merged into the reliability dimension.

The regression model for overall service quality was:

$$Y = 0.2440x_1 + 0.2602x_3 + 0.1767x_2 + 5.3068$$

where Y = Overall Quality
x_1 = Reliability
x_2 = Responsiveness
x_3 = Assurance

The equation implied that reliability, assurance followed by responsiveness (in decreasing order of importance) are important predictors of overall quality. The results are somewhat similar to Parasuraman et al.

(1988a) study where reliability is consistently the most critical dimension and assurance is the second most important dimension. However, the results differ from Parasuraman et al. (1988a) study where tangibles is found to be important than responsiveness, in the case of a bank, and empathy is the least important but by no means unimportant. In this study, the tangibles and empathy dimension are absent. The adjusted R square for this study at 0.28 was, however, similar to that obtained by Parasuraman et al. (1988a) for banks in their study.

Based on the above regression model, the overall service quality rating for UMBC was 4.56 on a scale of 1 to 7 ranging from very poor (1) to excellent (7). x_1 the reliability dimension was -1.76, x_2 the responsiveness dimension was -0.51, and x_3 the assurance dimension was -0.89.