Measuring Contributions of Information Technology on Bank's Service Offering: The Case of National Microfinance Bank (NMB) Ltd Tanzania

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Abstract- Increasing uses of information technology (IT) helps to solve problems of efficiency, speed and prompt services. This study aimed at measuring contributions of IT on bank services delivery and customer satisfaction (CS), specifically to assess whether customers are satisfied with operations, to determine major service quality (SQ) determinants and identify its relationship between these determinants and SQ as well as CS. This study adapted SERVQUAL instrument model developed by Parasuraman and others (1990) to gather information. Descriptive statistics (frequencies, means), multiple regressions and correlation analyses were used. Study found that customers were dissatisfied with service rendered, there are six factors that determine SQ and among those, service delivery system has strong influence on CS, there is strong positive multiple correlations between SQ determinants and CS as well as SQ itself. Likewise there was significant weak negative correlation between SQ and time of being a customer as well as insignificant weak positive correlation between SQ and reasons of shifting bank. Also all SQ determinants showed differences of less than one (P-E), indicating some improvement on service rendered. Full automation of Bank's services, carrying out a regular and thorough study of customer behavior, increase communication between top manager and customer-contact personnel were recommended to solve existing problems. Further, this study recommends that Bank of Tanzania should develop among others, rules and regulations that would enforce use of modern IT.

Index Terms- Information Technology, Consumer Satisfaction, Service quality

I. INTRODUCTION

For several decades in Tanzania, the structure of the banking environment has provided banks with clearly defined spheres of activity. Over time, key players like the National Bank of Commerce (NBC) and other commercial banks that were state owned have become comfortable with the status quo and the profitability of their businesses (Chijoriga, 1997). Increased competition, new technologies and shift in power from the provider to the customer have put pressure on financial services' institutions. Owing to ever increasing competition within banking services, in terms of both costs and banking products, overall customer satisfaction is playing a vital role in marketing management, since it is widely assumed and assessed to determine repeat sales, positive word of mouth recommendations and most importantly customer brand loyalty (Bearden and Teel, 1993). In such competitive environment, quality of services is critical to corporate successes. Lovelock (1996) comments that delivering high quality service is closely linked with profits, cost savings and market share. Therefore, issues associated with quality cannot be ignored.

The result is an increased competitive banking environment, which is demanding significant changes in attitude on the part of the banks that wish to retain their customers and previous levels of profitability. In order to survive as profitable entities in this environment, financial institutions need to use all available tools to capture these aspects. This situation has put pressure on commercial and other banks in a series of forms, like technological advancement with use of computers in banks' services, use of electronic banking that provides the customer with an incentive to use the bank that provides services through new technology such as ATM and plastic cards. Banks are now dealing with more sophisticated customers than was the case five years ago (Hassan, 1998). National Microfinance Bank Limited (NMB) is among the Microfinance banks in Tanzania. The bank has positive attitudes towards automated teller machine (NMB System manager). Therefore NMB is a bank that uses semi-automated system to date. Although IT has been in use in Tanzanian business organization for more than 30 years, IT as a business tool is still at rudimentary stage and much more is expected from IT in terms of tangible gains in the Tanzania environment (Juma, 1997).

Parasuraman and others (1988) argue that service firms' executives may not always understand what features connote high quality to consumers, what attributes a service must have in order to meet consumers' needs, and what level of performance those features are necessary to deliver high quality services. In today's increasingly competitive environment, quality service is critical to customer satisfaction. One of the major ways to differentiate a service firm is to deliver consistently higher quality services than its competitors (Kotler, 2003). Banking as a service industry is also concerned with marketing of its services. Banks must always make sure that the quality of the services rendered to customers is intended to satisfy the needs of its customers. Hence, issues like efficiency, prompt and courteous services rank among the very important aspects of a bank. However, some of these operational aspects are not adhered to by most banks in Tanzania (Mbaga, 1989). Such a phenomenon is more evident by delayed services at most of the counters of several banks in Tanzania (Kavura, 1990). Taking an example

from NMB Ltd, which covers most parts of the country, delay of services is still an observed phenomenon (Mzalendo, 2005; informal survey with some branches). In addition, there are a good number of complaints from customers regarding waiting time, time taken to clear their cheques and response rate to their concerns. In view of the above, there is a need to research on how IT helps to improve service quality in semi automated banking institutions taking NMB Ltd Tanzania as a case of study.

II. METHODS AND MATERIALS

Area of Study

The study was limited to National Micro Finance Bank (NMB Ltd). The study was carried out in branches found in Dar es Salaam since this is the center of the business and the effect can be observed. This place was selected because of data access, availability of data to meet objectives specified since the bank has branches scattered in almost all districts in Tanzania. NMB Ltd was thought to be a good representative of banks' services that are semi- automated, economically convenient to the researchers to easily collect data with less time constraints. Also the place have good information about the research since most customers are aware of ATMs, hence, could provide required information about expected and perceived services quality.

Data Collection

Primary data for the study was obtained using survey of customers from selected branches. There are many methods of data collection such observation methods, interview and questionnaire methods. The study used questionnaire to collect information from a sample. This study collected only Primary data from individual's customers. The researchers administered face-to-face interview using a total of 120 questionnaires for data collection.

Research Model

The research adopted service quality model determinants from Parasuraman and others (1991), which are categorized into 5 dimensions. This includes tangibility, reliability, responsiveness, assurance and empathy. The relationship of service quality and customer satisfaction was adopted from Taylor and Cronin, 1992. This led researchers to include variables that were useful in measuring service quality in marketplace.

Study Variables

The six dimensions were the independent variable and service quality was dependent variables. A linear multiple regressions were used to assess the relationship between the independent variables and dependent variable. Theoretically, customers' satisfaction was found to be the function of service quality and the service quality comprised the quality determinants. Mathematical representation of the research model was:

$$SQ = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \text{ and}$$
$$CS = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Where SQ= service quality in semi-automated bank
CS= Customer Satisfaction in semi automated bank

X_1 = Service delivery system
X_2 = Tangible
X_3 = Reliability
X_4 = Responsiveness
X_5 = Assurance
X_6 = Empathy
ε = Error term of equation

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5,$ and β_6 are constant terms (coefficient of variables)
Interpretation of the regression coefficients
α and β are called regression coefficient and have the following interpretations:

α - (Constant term/ y- intercept)-shows value the dependent variable (SQ or CS) can take without any impact of service quality determinants (Xs).

On the other hand, β (slope) has two interpretations. First, it shows the direction of the relationship. If its value is positive, then we say that there is a positive relationship between the regressed variables. Conversely, if the value of the slope is negative, then we understand that the two variables are negatively related. The second interpretation is that, it shows the amount by which dependent variable (SQ or CS) will change by increasing one unit of service quality determinants (Xs).

Instrumentation

Service quality measurement in banking industry is an area of growing interest to the researchers and Managers. Hence the research employed the SERVQUAL instrument developed by Parasuraman and others (1990) and made some changes in order to fit into research objectives in determining the service quality determinants. Procedure of obtaining Servqual score;

Servqual Score= P-E score
To obtain an overall weighted Servqual score that takes into account the relative importance of the dimension for each customer it involves five steps.

 i.   Computing the difference between ratings customers assign to the paired expectation-perceived statements.
 ii.   Computing the average Servqual score for each of the five dimensions by adding Servqual scores on the statements pertaining to dimensions and dividing the sum by the number of statements making up the dimension.
 iii. Multiplying the Servqual score for each in (ii) by the importance weight assigned by the customers to that dimension (the importance weight being the points the customer allocates to the dimension divided by 100)
 iv.   Adding the weighted Servqual scores (obtained in step (iii) across all five dimensions to obtain a combined weighted Servqual score)
 v.   Adding the scores obtained in step (iv) across all N customers and dividing the total by N

This gives an overall measure of the bank's services quality as assigned by all customers surveyed.

Data Analysis

Data was analyzed at 95 percent and 99 percent levels of significant. The sample size of 120 customers was drawn from total population. Statistical package for social sciences (SPSS) was used to make the analysis and to test the hypotheses stated. Frequencies and percentages of various qualitative and quantitative variables were used to show proportion of customers as well as factors affecting customer satisfaction. Factors that determine service quality was analyzed through the SERVQUAL instruments. Correlation analysis was employed to assess which determinants of service have strong relationship with service quality and customers' satisfaction, regression analysis was used to show the degree of relationship between variables.

Data Analysis for each Hypothesis

H1: Services quality does not have a direct relationship with Customer satisfaction.

Correlation analysis was used to test this hypothesis specifically Karl Pearson's coefficient of correlation.

H2: Service quality does not have direct influence on customer loyalty. The same applied to this hypothesis Correlation analysis was used for analysis

H3: Service quality determinants do not have direct relationship to service quality and have strong influence on customer satisfaction. Multiple regression analysis was used to analyze this. As described above method show the functional relationships (causal analysis) between variable.

H4: There is no relationship between service quality determinant and customers' satisfaction. The same applied to this hypothesis correlation analysis was used to make analysis.

III. RESULTS AND DISCUSSION

Sample Profile

Table 1 represents individual customer's profile. This includes gender, age, education, current occupations as well as sector of work. From table 1 more than three quarters of respondents were educated, with qualifications above secondary education. Among those respondents interviewed more than half were males whereas females were less than half. Those respondents grouped (year zero to 30 years of age) as youth were one third, whereas those in middle age were more than half. This however might influence some variables such as customer satisfactions, since a certain age group as well as education level might have certain things that satisfy them.

Table 1: Individual Customer's Profile

Characteristics	RESPONSES					Total no. of Respondents
Gender	Male	Female				120
	71(59.2%)	49(40.8%)				
Age	Less than 20	20-30	31-40	41 and above		120
	1(0.8%)	48(40.0%)	70(58.4%)	1 (0.8%)		
Education	Primary	Secondary	Diploma	Bachelor degree	Post graduate	120
	5(4.3%)	22(18.3%)	4(3.3%)	70(58.3%)	19(15.8%)	
Sector	Public	Private	Self employed	Other		120
	60(50.0%)	23(19.2%)	14(11.6%)	23(19.2%)		
Current occupation	Professional	Administrative	Business person	students		120
	54(45.0%)	23(19.2%)	20(16.6%)	23(19.2%)		

Source: Research data, 2005

Test of Validity and Reliability

The study made questionnaire pre-testing in order to measure content validity of the instruments. Table 2 presents measures of reliability for statements of perceived service quality, customer satisfactions as well as customers' loyalty.

Table 2 shows perceived quality and customer satisfactions statements have alpha that is above the minimum level, hence show reliability of information while customers' loyalty statements do not.

Table 2: Measure of Reliability

Components	No of items	Alpha
Perceived quality statements	23	0.9293
Customers satisfactions	4	0.8380
Customers loyalty	2	0.1883
Overall reliability	29	0.9030

Source: Research Data, 2005

In the process of checking sampling adequacy, Kaiser-Meyer- Olkin (KMO) and Bartlett's test measure of sample adequacy was used. The sample had the value of +0.839 with significant Bartlett's test of Sphericity (approximate Chi-Square) of 2812.177.

Measure of Service Quality

Table 3 indicates the score from SERVQUAL instruments. Gap score was obtained by subtracting expected (E) from perceived (P) from each statement pertained in SERVQUAL instrument. Adding gap score for each of the statements that constitute the dimension and dividing the sum by the number of statements making up the dimension obtained an average gap score for each dimension (see table 6 for more details). Dimensions were given the same important weight (20%) hence the average gap score for each dimension was multiplied by these important weights in order to obtain weighted score for each one

(refer table 3). Finally the average of these weights gave the weighted SERVQUAL score, which is a measure of the service quality as provided by pioneers of the SERVQUAL instruments. If consumer's expectations do not match perceived level of service received, a gap definitely exists (negative or positive). Negative gap shows customers dissatisfactions. According to studies by Sonnenberg (1989), more than forty percent of all customers' surveyed listed poor service as the number one reason for switching to a competitor.

Generally table 3 indicates that more dimensions show the average gap score that is above –1.5, which is a bit high. Probably customers gave more weight on these dimensions when they were judging service quality. Again from these results one would say that services provided by this bank were not as good as the customers' expectation.

Table 3: Weighted SERVQUAL score

Dimensions (determinants)	Average gap score (A)	Important weight (I)	Product (I*A)
Tangible	-1.55833	0.2	-0.31167
Reliability	-1.896666	0.2	-0.37933
Responsiveness	-1.8666675	0.2	-0.37333
Assurance	-1.03542	0.2	-0.20708
Empathy	-1.688334	0.2	-0.33767
Sum			-1.60908
Average Servqual scores (unweighted score) = Sum of A/5			-1.6090835

Source: Research data, 2005

Model Testing

This section presents the empirical findings and tests of the research model. The model was tested using the actual field data. Table 4 indicates service quality model summary. From the model summary, multiple linear regressions summarized that almost sixty percent of variability of the service quality can be explained by variables included in the model (That is service delivery system, tangible, reliability, responsiveness, assurance and empathy) as can be deduced from the coefficient of determination (r2 =0.595). However, taking into account standard deviation of overstating, adjusted R-square were 0.499, indicating that this model can account for whole 49.9 percent of variation in service quality.

Regression ANOVA (F tests for slope = 6.144) and it is significant, this implies that at five percent level of significant,

there is some linear relationship between service quality determinants and service quality (statistical significant does exist). There is positive multiple correlations (r = 0.772) between service quality and service quality determinants, indicating that when service determinants were improved, service quality would improve too. Further, the standard error of estimate obtained is 0.543 indicating variability around the fitted line of regression. This measures the vertical distance from line of regression to the actual points. It measures how the level service quality said by individual respondent deviate from average service quality level.

Therefore in Table 4 it can be deduced that there is positive relationship between service quality determinants and service quality, regression ANOVA represents that there is significant relationship between explanatory variable (service quality determinants) and dependent variable (service quality).

Table 4: SQ Model Summary

Variables	Value	F	Sig.
Multiple correlation coefficient (R)	0.772		
R square (coefficient of determination)	0.595		
Adjusted R square	0.499		
Std. Error of the Estimate	0.543		
Regression ANOVA		6.144	.000

Source: Research data, 2005

Table 5 indicates coefficients of the SQ model. From the previous specified model:

$SQ = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$

This model can be replaced as follows:-

$SQ = 0.673 + 0.2 X_1 + (-0.0104) X_2 + 0.0227 X_3 + 0.0364 X_4 + 0.0176 X_5 + 0.0629 X_6 + \varepsilon$

Where $\alpha = 0.673$ is constant term (Y- intercept)

$\beta_1 = 0.2$, $\beta_2 = -0.0104$, $\beta_3 = 0.0227$, $\beta_4 = 0.0364$, $\beta_5 = 0.0176$, $\beta_6 = 0.0629$ are coefficients of service quality determinants (independent variables) and (-error term)

Table 5: Coefficients of Service Quality Determinants in relation to SQ Model 1

Model 1	Coefficients		Std error	t	Sig.	95% confidence Interval for β	
	β	Beta				Lower Bound	Upper Bound
Constant	0.673		0.295	2.285	0.025	0.088	1.258
Tangible	0.0104	-0.0185	0.086	-0.069	0.558	-0.18	0.159
Reliability	0.0227	0.0278	0.084	0.303	0.362	-0.144	0.189
Responsiveness	0.0364	0.0643	0.091	0.1093	0.560	-0.145	0.217
Assurance	0.0176	0.0275	0.080	0.325	0.330	-0.140	0.176
Empathy	0.0629	0.0902	0.078	0.9226	0.174	-0.046	0.218
Service delivery system	0.200	0.272	0.067	2.983	0.004	0.067	0.333

Source: Research data, 2005***Note: Dependent Variable: How would you rate the quality of service provided by NMB?   β – Un-standardized coefficients and Beta- Standardized coefficients

The above equation shows the extent to which service quality can be predicted from these six variables. From the equation, five coefficients show positive relationship with service quality (that is service delivery system, reliability, responsiveness, assurance and empathy) and tangible with negative relationship. Among those with positive relationship, service delivery system has more influence on service quality as it has higher coefficient compared to the rest. This study is in agreement with studies done by Bateson (1984) when customers freely use IT as a form of service delivery, the impact is high in terms of quality attributes (that is efficiency and speed). In view of this it can be said that in the eyes of customers, quality service was judged more on how service was delivered.

At five percent confidence interval, results show that there is a significant (0.004) relationship between service delivery system and service quality as well as statistical significant relationship between service quality and non-included explanatory variable. This can be deduced from the constant term 0.673 with 0.025level of significance.

Moreover all coefficients lie between the lower and upper bounds of the confidence interval, thus at 5 percent confidence interval it can be concluded that the explanatory variables (independent variables) best fit to explain variability of the service quality. Hence there is sufficient statistical evidence in the sample to indicate that service quality is related to these predetermined service quality determinants.

The t- statistics for the parameters are shown in table 5 above, with $p < 0.05$. The 95 percent confidence intervals (95% CI) for the estimates are also included in table 5. Based on these results it can be concluded that five explanatory variables have positive influence on service quality and tangible has negative influence on service quality. As stated earlier, standard error of the estimate measures how the level service quality said by individual respondent deviate from average service quality level. Table 5 indicates that each determinant of service quality deviates from predicted average level of service quality by less than ten percent (range from 0.067 to 0.091), indicating unbiased estimator hence it is reliable.

Furthermore, it can be deduced that there were factors other than those specified in the model, which could have effects on the service quality. These factors are the ones that have resulted to the above constant of 0.673. Also these can be revealed from the coefficient of determination ($r^2 = 0.595$) of the model, which indicates that specified independent variables explain almost sixty percent of the observed variability in factors influencing service quality (See table 5 for details).

Table 6 below gives CS model summary. From this table, results indicate that there is strong positive correlation (multiple correlation coefficients (r) = 0.869) between service quality determinants and customer satisfaction. This implies that as service quality determinants are improved, customer's satisfaction increases in the same direction. Coefficient of determination of explanatory variable (r2 = 0.755) took into account that the regression model fitted particular data, which was developed for. The above model therefore, fitted the regression line by 75.5 percent, indicating that explanatory variable (service quality determinants) can explain and predict customer satisfaction by 75.5 percent. The remaining 25 percent, of customer satisfaction can be explained by other factors not included in that model (constant term) as explained above.

However, taking into account standard deviation of overstating, adjusted R-square were 0.697, indications are that this model can account for whole 69.7% of variation in customers' satisfactions. Further regression ANOVA (F tests for slope = 12.889) which is significant, implies that at five percent level of significant, there is some linear relationship between service quality determinants and customers' satisfaction (statistical significant does exist). Furthermore, the standard error of the estimate obtained is 0.516 indicating variability around the fitted line of regression. This measures the vertical distance from line of regression to the actual points. It measures how the level of customer satisfaction given by individual respondent deviate from average level of customers' satisfaction.

Table 6: CS Model Summary

Variables	Value	F	Sig.
Multiple correlation coefficient (R)	0.869		
R square (coefficient of determination)	0.755		
Adjusted R square	0.697		
Std. Error of the Estimate	0.516		
Regression ANOVA		12.889	.000

Source: Research data, 2005

Table 7 gives the CS coefficients.
The specified regression equation
CS=α +(β1X1)+(β2X2)+(β3X3)+(β4X4)+(β5X5)+(β 6X6)+ ε
Would be represented as
 CS=0.385+0.495X1+   (-.0.02946)   X2+   (-0.021324)
X3+0.11257X4+

(-0.0259) X5+0.0816X6 + ε
α = 0.385 is constant term (Y- intercept)
 β1 = 0.495, β2 = (-.0.02946), β3 = (-0.021324), β4 =0.11257, β5= (-0.0259)
β6 = 0.0816 are coefficients of customer satisfaction and (is error term)

Table 7: Coefficient of service quality in relation to customer Satisfaction

Model 1	Coefficients		Std. Error	t	Sig.	95% Confidence Interval for β	
	β	Beta				Lower Bound	Upper Bound
Constant	.385		.280	1.372	.173	-.172	.941
Tangible	-.0.0285	-0.041	.081	-0.319	.450	-0.191	0.131
Reliability	-0.0213	-0.033	.240	-0.279	.217	-0.180	0.137
Responsiveness	0.11257	0.159	.087	1.408	.341	-0.060	0.285
Assurance	-0.0259	-0.002	.229	-0.248	.472	-0.176	0.124
Empathy	0.0816	0.106	.074	1.136	.362	-0.066	0.2292
Service delivery system	0.495	0.550	.064	7.753	.000	0.368	0.621

Source: Research data, 2005 ***** Dependent Variable: In summary, how are you satisfied with the system of operation of NMB bank? β -Unstandardized coefficients and Beta- Standardized coefficients

From the above CS equation, it can be deduced that there is a positive relationship between customer satisfaction and service delivery system (semi automated delivery system), responsiveness as well as empathy. Furthermore it has the negative relationship with the tangible, reliability and assurance. This indicates that customer satisfaction changes in the same direction as service delivery system, responsiveness as well as empathy.

At five percent confidence interval, results show that there is a significant (0.000) relationship between service delivery system and customers satisfaction. Thus it can be deduced that statistical evidence shows significant relationship between service delivery systems and customer satisfaction.

Further, it can be deduced that there were factors other than those specified in the model, which could have influence on customer's satisfactions. These factors are the ones that have resulted to the above constant of 0.385.

From the model summary tables, both equation SQ and CS have multiple correlation coefficients (R) that are 0.772 and 0.869 respectively. Also each equation had coefficient of determination, which were above fifty percent. Thus it can be concluded that the predictive power of the multiple linear regression equations are strongly positive. In both table 5 and 7 coefficients of the model equations laid between their bounds implying best fit of explanatory variable to these specified models. However, from constant terms, it can be deduced that both equations could have other factors that might influence these models.

Hypotheses Tested

This research had four hypotheses. First hypothesis dealt with the relationships between service quality and customer satisfactions. The next hypothesis was developed in order to capture information that would show a relationship between service quality and customer loyalty. The third one was developed in order to observe relationship between service quality determinants, service quality and customer satisfaction. Lastly was developed, as there is some relationship between service quality determinant and customer satisfaction.

Test of Hypothesis (H1)

H0: Services quality does not have a direct relationship with Customer satisfaction.

H1: Services quality has a direct relationship with Customer satisfaction.

To test relationship between service quality and customer satisfaction, correlation analysis was used. Overall service quality was crosschecked with overall customer satisfaction. Table 8 indicates correlation results between service quality and customers' satisfactions. Results indicate that there is a significant positive correlation coefficient (r = 0.586) between service quality and the customers' satisfactions. A study done by Jayawardhena (2004) showed that improving quality service over the Internet assures customer satisfaction. Therefore at 99 percent confidence interval, results indicate that when service quality is increased or improved, the more customer satisfactions would be. Generally at 99 percent confidence interval, this research rejects the null hypothesis that there is direct relationship between service quality and customer satisfaction.

Table 8: Pearson's Correlations

Criteria	Over all service quality
Overall satisfaction	0.586
Sig. (2-tailed)	0.000
Total of respondents	120

Source: Research Data, 2005: Correlation is significant at the 0.01 level (2-tailed).

Test of Hypothesis (H2)

H0: Service quality does not have direct influence on customer loyalty

H1: Service quality has direct influence on customer loyalty

Table 9 gives results that were used to test this relationship. To test this hypothesis the correlation analysis was used. When overall service quality crosschecked with reasons of changing/shifting bank, results show that there is a insignificant positive correlation between customer loyalties and overall service quality with correlation coefficient 0.071. At 99 percent confidence interval results suggest that being a customer at NMB bank does not depend on service quality. There might be other factors that make customers not to change or shift banks. Probably, customers seem not to change because their salaries are processed through this bank, especially civil servants. This can be supported by looking at the correlation between overall service quality and periods being a customer of the bank. Results show that there is significant negative correlation coefficient (-0.339) between these two constructs (see table 9). At 99 percent the result is significant, thus it can be deduced that service quality is not a determinant to time of being an esteemed customer of the bank. Thus, it agreed that customer loyalty is not caused by service quality, but there were other factors that made them be loyal to the bank.

From table 9 and hypothesis, decision rule, at 99 percent confidence interval do not accept null hypothesis that Service quality has direct influence on customer loyalty.

Table 9: Pearson's correlation coefficient

Variables	Reasons of changing or shifting banks	How long have you been using banking services with NMB?
How would you rate the quality of service provided by NMB?	0.071	-0.339
Sig. (2 -tailed)	0.405	0.000
N	101	120

Source: **Research data, 2005**

Test of Hypothesis (H3)

H0: Service quality determinants do not have direct relationship to service quality and have strong influence on customer satisfaction

H1: Service quality determinants have direct relationship to service quality and have strong influence on customer satisfaction

Results from tables 4, 5, 6 and 7 were used to assess this hypothesis. Multiple linear regressions were used. From table 5 results show that there is negative relationship between service quality and tangible determinant, but the rest show the positive relationships. However both have linear relationship with service quality, service delivery system has showed significant positive relationship with service quality (coefficient = 0.200). Further multiple correlations coefficient (0.772) showed that there is positive correlation between service quality and service quality determinants. Thus at 95 percent confidence interval, decision rule do not reject the null hypothesis that there is strong relationship between service quality determinant and customer satisfaction.

Test of Hypothesis (H4)

H0: There is no relationship between service quality determinant and customers' satisfaction.

H1: There is some relationship between service quality determinant and customers' satisfaction.

Table 10 indicates that at 99 percent confidence interval do not reject null hypothesis, that there is statistical significant to show some relationship between service quality determinant and customer satisfaction.

Table 10: Relationship between Service quality determinants and customer satisfaction

SQ determinant	Pearson Correlation coefficient	Sig. (2-tailed) Precision (0.01)
Tangible	0.3705	0.005
Reliability	0.4054	0.000
Responsiveness	0.481	0.000
Assurance	0.3615	0.001
Empathy	0.4306	0.007
Service delivery system	0.612	0.000

Source: Research date, 2005

IV. CONCLUSION

Information technology/system have been considered as an important tool for improving organizations efficiency, improving service quality as well as one of the current driving forces in competitive environments. This study assessed the role played by information technology in service quality determinants, service delivery system and customers' satisfaction. Results indicated that customers were not satisfied with the semi automated service delivery systems, service quality determinants showed service quality inadequacy. Therefore NMB bank has not yet fully exploited potentials of information technology (especially the use of ATM) as weapons of competitions in banking services. Generally the analysis of the hypotheses showed that there was significant positive correlation coefficient between service quality and the customer satisfaction; insignificant positive correlation between reasons of changing/shifting bank and overall service quality and strong relationship between service quality determinant and customer satisfaction.

V. RECOMMENDATIONS

Based on findings, this research recommends that NMB should increase investment in modern technology in order to improve service delivery systems because customers are aware of modernized ways of service delivery system (ATMs). This could help to reduce the problem of long queues as well as delayed services.

Further, this study recommends that Bank of Tanzania should develop among others, rules and regulations that would enforce use of modern IT.

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