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The Effect of ATM Service Quality on Customer Satisfaction: Evidences from Customers of Ethiopian Commercial Banks in Debremarkos Town, 2016

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Abstract
The paper studied the effect of ATM service quality on customer satisfaction in Ethiopian commercial Banks, using proportional stratified and simple random sampling technique and cross-sectional data collected from 190 customers of Ethiopian commercial banks, in Debre Markos town. The data collected were analyzed using Statistical tools such as mean, standard deviation, correlation, and multiple regression model. The results indicated that except assurance, tangibility, reliability, responsiveness and empathy have positive and significant effect on customer satisfaction and the customers were mostly satisfied with the responsiveness dimensions of ATM service quality. Furthermore, the tangibility, reliability, responsiveness and empathy significantly explained 79.2% of the variations on customer's satisfaction level. It was suggested to the management of the bank to pay attention for training and developing staffs' skill in using ATM services in addition to installing the ATM in appropriate and accessible places.
Key words: - ATM, Service Quality, Customer Satisfaction, Commercial Banks

1. Background of the Study

Service is "any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product" (kottler, 2003; p128). Although services were performed by service providers and consumers together, its quality results in perception and value assessment by the customer (Rao; 2007). In today's increasing competitive business environment, service quality is essential for the success of any organization. Banks should increase the quality of service constantly since there is no assurance that the current outstanding service is also suitable for future. Consequently, banks should "develop new strategy" to satisfy their customer and should provide quality service to distinguish themselves from rivalries (Siddiqi; 2011).

Customer satisfaction is the major issue for the business that is operating in technology based services and related services. Good customer service quality is the main factor that will determine; in the future whether the business will survive or fail (Thompson &Bokma 2000). Due to rapid technology change and market competition service quality becomes an increasingly important issue .Therefore understanding a service quality issue becomes very important to satisfy the customer (Broderick& Vachirapornpuk 2002). An automated teller machine allows a bank customer to conduct their banking transactions from almost every other ATM in the world. The developments of technologies have enabled organizations to provide superior services for customers' satisfaction (Surjadjaja et al., 2003). The availability of several ATMs country wide has greatly improved the quality and convenience of service delivery however, some researchers have stated that users' satisfaction is an essential determinant of success of the technology-based delivery channels (Tong, 2009).

Study made by Munusamy et al., (2010) showed that the assurance, empathy, and responsiveness have positive and insignificant effect on customer satisfaction and tangibility has a positive and significant impact on customer satisfaction. However, reliability has a negative and insignificant effect on customer satisfaction. In Jordan study on commercial banks by Mohammad and Alhamadani (2011) investigated that tangibility, reliability, responsiveness, assurance and empathy have a positive and significant effect on customer satisfaction.

Similarly, Al-Hawary et al., (2011) investigated that tangibility, reliability, assurance, and responsiveness have a positive and significant effect on customer satisfaction. However, Empathy has a negative and significant effect on customer satisfaction. Similarly, the study of Malik et al., (2011) concluded that reliability, and assurance have a significant and positive effect on customer satisfaction. However, tangibility, responsiveness and empathy have no contribution to customer satisfaction. Kassa (2012) conducted the study on the effect of customer service quality on customer satisfaction in selected private banks in Addis Ababa and found that, except responsiveness, tangibility, assurance, empathy and reliability have positive and significant relationship with customer satisfaction, especially, indicated that customers were most satisfied with the assurance dimensions of service quality. On the contrary, customers were less satisfied with reliability and empathy dimensions of service quality.

An empirical study on automated teller machine service quality on customer satisfaction was conducted by Idowu & Fadiya (2015) and survey from 200 ATM users in Lagos indicated that among the ATM service quality dimensions, reliability, responsiveness, and empathy are the most important factors to increase the satisfaction level. Whereas in measuring the customer satisfaction as regards to ATM services, assurance dimension shows insignificant in comparison to other dimensions. A study on 15 banks in Ghana by Narteh (2013) identified five dimensions of the "ATM quality" model. In order of importance, these dimensions are reliability, convenience, responsiveness, ease of use and fulfillment.

Globalization and information technology also bring new threats to domestic business firms: Because of global communication and management systems, customers now can shop in a worldwide marketplace, obtaining price and quality information reliably 24 hours a day. ICT has provided new products and value added services to be delivered using the same electronic infrastructure (Abor, 2004). In order to remain competitive edge most companies invest a lot of money in modern ICT infrastructure, because it has applicable positive effects on banks productivity, banking hall transaction, bank service delivery (Balachander et al, 2001, Yasuhru, 2003).

Even though Ethiopian commercial banks are taking advantage of the technological advancements and introducing automated teller machines, there was a general outcry from commercial bank of Ethiopia. There are constraints to low transaction that resulted a long queues. Thus causing dissatisfaction among customers who use ATM banking and the bank customers usually complain of poor ATM service quality especially at the end of the month when the civil servants withdraw their monthly salary. Although a few studies were conducted with banks related with customer satisfaction until now there is no research conducted on the effect of ATM service quality on customer satisfaction in Ethiopia Commercial Banks context. So it become important for banks to assess the effect of ATM banking service quality based on customers satisfaction.

1.1. RESEARCH METHODOLOGY

Research Design- Cross-sectional study design and quantitative data was collected from Bank customers.

Target population and sampling techniques-All customers of Ethiopian Commercial Banks who used ATM service in Debremarkos Town were target groups of this study. There were 10 Commercial Banks in Debre Markos town, so that Proportional stratified sampling technique was employed based on which ATM users were belong to each banks

Sample Size Determination-According to the Yamane"s simplified formula for population used to determine the sample size for the study. This is defined as $\mathbf{n= N/ 1+N (e)^2}$, Where n= sample size, N=population, e= margin of error. Therefore, 200 ATM users were selected using the above formula.

Source of Data - Primary data was obtained from customers of Ethiopian Commercial Banks who were ATM users in debremarkos town, but secondary data was obtained from literatures from books, journals, magazines and the internet as accredited in the literature review.

Tools of Data Collection -In this study structured questionnaire were used which prepared by Amharic and English language to collect from ATM users. The questionnaire has four parts. The first part of the questionnaire is about the demographic characteristics of respondents. The second section designed to measure the ATM service quality, the third customers' satisfaction about the bank ATM service delivery system. The researcher used 5 point Likert scale to measure the variables. Service quality has been measured by using SERVQUAL items developed by Zeithaml, Berry, and Parasuraman and "Customer satisfaction was measured by instruments developed by Prof. N. Kano, customer satisfaction model (Adapted from Kano, 1984).

Data analysis - The statistical package for social science (SPSS, version 20.0) was used and the data was summarized in frequency tables and figures. The descriptive statistical results were presented by tables, frequency distributions and percentages to give a condensed picture of the data. This was achieved through summary statistics, which includes the means, standard deviations values which were computed for each variable in this study. In this study Pearson's correlation coefficient was used to determine the relationships among service quality dimensions such as Tangibility, reliability, responsiveness, assurance empathy and customer satisfaction.

Regression model specification - Multiple regression analysis was used to investigate the effect of service quality dimensions (Tangibility, reliability, responsiveness, assurance, and empathy) on customer satisfaction. The equation of multiple regressions on this study was generally built around two sets of variable, namely dependent variables (customer satisfaction) and independent variables (Tangibility, reliability, responsiveness, assurance, and empathy). The basic objective of using regression equation on this study was to make the researcher more effective at describing, understanding, predicting, and controlling the stated variables. Regress customer satisfaction on the service quality dimensions

$\mathbf{Yi = \beta1 + \beta2X2 + \beta3\ X3 + \beta\ 4X4 + \beta\ 5X5 + \beta6X6+e}$ **,** Where Y is the dependent variable- customer satisfaction**,** X2, X3, X4, X5, and X6 are the explanatory variables **,** β1 is the intercept term- it gave the mean or average effect on Y of all the variables excluded from the equation, and B2, β3, β4, β5, and β6 refer to the coefficient of

their respective independent variable which measured the change in the mean value of Y, per unit change in their respective independent variables.

1.1.1. RESULTS

Two hundred questionnaires were distributed to customers of three Ethiopian Commercial banks who were ATM users in debremarkos town. However, a total of 190 useable copies of the questionnaires were returned.

Demographic Profile of Respondents - As shown in table 4.2, there were more males (64.7%,) as compared to females, and as far as age of respondents is concerned, 15.3% of the respondents were in the range of 18-25 years, 60.5% of them were in the range of 26-35 years, 17.9% were in the range of 36-45 years, and 5.8% were in the range of 46-55.

Table 4.2 Demographic profile of respondents **(N=190)**

Variables	**Category**	**Frequency**	**Percent (%)**
Sex	male	123	64.7
	female	67	35.3
Age	18-25	29	15.3
	26-35	115	60.5
	36-45	34	17.9
	46-55	11	5.8
	Above 55	1	.5
Education Level	High school	5	2.6
	Certificate	16	8.4
	Diploma	45	23.7
	Degree	114	60
	Master and Above	10	5.3
IT experience	Low	115	60.5
	High	75	39.5

Academically, only 8.4% of the customers were certificate holders, and Diploma holders were 23.7%, however, 60% were degree holders. In terms of experience, 60.5% of the respondents have low experience with information technology.

Item Reliability Test-Although the questionnaires were adopted from the SERVQUAL items developed by Zeithaml, Berry, and Parasuraman (1988) and Customer satisfaction model Adapted from Kano (1984), cronbach's coefficient alpha was used to test the internal consistency and reliability of the multiple item scales. The Alpha coefficient of the whole items for this study was 0.748. So, it is reliable.

Table 4.3 Item Reliability statistics

Constructs	**Cronbach's Alpha**	**N of Items**
Customer satisfaction	0.723	6
Tangibility	0.774	5
Reliability	0.621	5
Responsiveness	0.841	4
Assurance	0.762	5
Empathy	0.768	4
The whole items	0.748	29

OLS tests for the multiple regression model- It should be noted that the three classic assumptions Normality, Multi-collinearity and Autocorrelation must be tested in undertaking the regression analysis (Brooks, 2008).

Therefore the test results for each assumptions were indicated. For Normality **Test** histogram of residuals on figure 4.1 and normal probability plot (NPP) on figure 4.2 revealed that the residuals are normally distributed around its mean of zero.

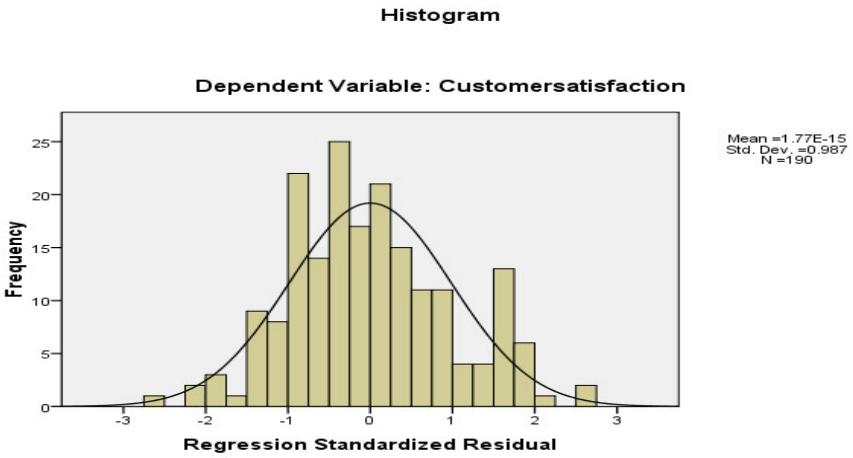

Figure 4.1 Histogram of residuals

In addition to histogram of residuals, the normal probability plots were used to test the normality of data. Hence, Figure 4.2 below indicated that residuals from the research model regression are approximately normally distributed, because a straight line gives the impression to fit the data reasonably well. This test also shows the normal distribution of residuals around its mean of zero.

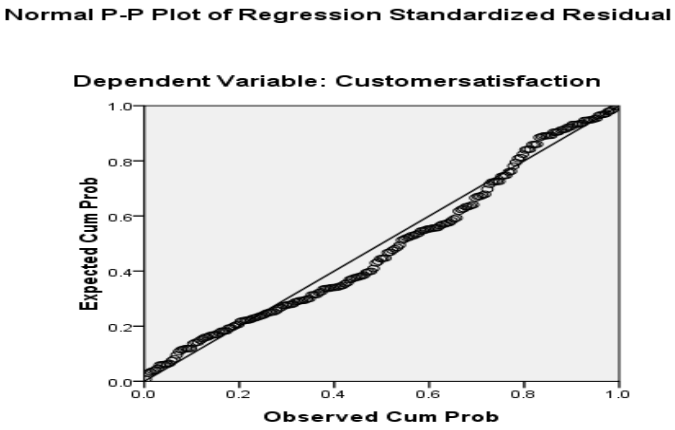

Figure 4.2: Normal P-P Plot of Regression Standardized Residual

Multi co linearity exists when there is a strong correlation between two or more predictors in the regression model. There are various methods to produce a co linearity diagnostics and under this study the variance inflating factor (VIF) and tolerance value tested. The larger the value of VIF, above 10.0 is the more troublesome or collinear the variable (Hair et al. 1998). Any variables with a tolerance value below 0.10 or the closer the tolerance value to zero indicates a level of Multicollinearity. Regression results (table 4.8) showed there is no Multicollinearity between the independent variables. From the regression results in the model of this study, as shown (in table 4.6), the value of the Durbin-Watson test is closer to 2 (1.802), so, it can be safely assumed that there is no problem of autocorrelation.

Descriptive statistics analysis- The summary statistics of all the variables in this study was represented as in the following table (4.4) showed that there are 190 observations for each variable, the mean and standard deviation values were calculated.

Table 4.4 Descriptive Statistics analysis of mean and standard deviation

Variable	N	Mean	Std. deviation
Tangibility	190	3.3337	.66382
Reliability	190	3.2513	.77008
Responsiveness	190	3.6237	.71212
Assurance	190	2.3779	.71369
Empathy	190	3.1013	.69954
Customer satisfaction	190	2.3365	.67227
Valid N (list wise)	190		

Source: SPSS Regression output

As indicated in Table 4.4 customers of Ethiopian commercial banks were satisfied by the five service

quality dimensions with a mean and standard deviation of (tangibility 3.3337 and .66382, reliability 3.2513 and .77008, responsiveness 3.6237 and .71212, assurance 2.3779 and .71369, empathy 3.1013and .69954) respectively. However, table 4.4 indicated that customers of commercial bank of Ethiopia were satisfied by only four service quality dimensions (tangibility, reliability, responsiveness and empathy).

Table 4.4 indicates that among such variables, Responsiveness has the highest mean value and assurance has least mean value. Therefore, it may be concluded from table 4.4 that respondents are most satisfied with responsiveness dimensions with a mean and standard deviation of 3.6237 and .71212 respectively.

Correlation Analysis - Pearson correlation was computed and Table 4.5 showed the correlation between the variables for this study.

Table 4.5. Correlations tables for service quality dimensions

Variables		**1**	**2**	**3**	**4**	**5**	**6**
Tangibility	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	190					
Reliability	Pearson Correlation	-0.302**	1				
	Sig. (2-tailed)	0.000					
	N	190	190				
Responsiveness	Pearson Correlation	0.185**	.003	1			
	Sig. (2-tailed)	0.009	.969				
	N	200	200	200			
Assurance	Pearson Correlation	.250**	-.231**	.422**	1		
	Sig. (2-tailed)	.000	.001	.000			
	N	190	190	190	190		
Empathy	Pearson Correlation	-.381**	.201**	-.357**	-0.356**	1	
	Sig. (2-tailed)	.000	.004	.000	0.000		
	N	190	190	190	190	190	
Customer satisfaction	Pearson Correlation	.248**	.158*	.465**	-0.170	.103**	1
	Sig. (2-tailed)	.000	.018	.000	.056	.004	
	N	190	190	190	190	190	190

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The results indicate that, there is positive and significant relationship between tangibility and customer satisfaction ($r = 0.248$, $p < 0.01$), reliability and customer satisfaction ($r = 0.158$, $P < 0.05$), responsiveness and customer satisfaction ($r = 0.465$, $P < 0.01$), empathy and customer satisfaction ($r = 0.103$, < 0.01). However, the results also indicate that, there is a negative and insignificant relationship between assurance and customer satisfaction ($r = -0.170$, $p > 0.05$). The finding on table 4.5 above further indicates that the highest relationship is found between responsiveness and customer satisfaction ($r = 0.465$, $p < 0.01$). Unlike assurance four service quality dimensions (tangibility, reliability, responsiveness and empathy) has a positive relationship with customer satisfaction.

Multiple regression results- Tables 4.6, 4.7 and 4.8 presented the results from the multiple regression analysis.

Table 4.6 model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.890a	.792	.786	.11629	1.802

a. Predictors: (Constant), Empathy, Reliability, Responsiveness, Tangibility, Assurance
b. Dependent Variable: Customer satisfaction.

From table 4.6, it can be seen that the R Square value for the model showed that 79.2% of the variance in the model can be predicted from the five dimensions of service quality (independence variables): Empathy, Reliability, Responsiveness, Tangible and Assurance.

Table 4.7 ANOVA table

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.467	5	1.893	140.014	.000a
Residual	2.488	184	.014		
Total	11.955	189			

a. Predictors: (Constant), Empathy, Reliability, Responsiveness, Tangible, Assurance
b. Dependent Variable: Customer satisfaction

Table 4.7 gives the ANOVA test on the general significance of the model. As p is less than 0.05, the model is significant. Thus, Empathy, Reliability, Responsiveness, Tangible and Assurance significantly predict the dependent variable customer satisfaction (F=140.014; p<0.05).

Table 4.8 Regression of customer Satisfaction on ATM service quality.

		Coefficients						
		Unstandardized Coefficients		Standardized Coefficients			Co-linearity Statistics	
Independent Variable								
		B	Std. Error	Beta	t	Sig	Tolerance	VIF
Model	(Constant)	-0.860	0.104		-0.296	.000		
	Tangibility	.017	.014	.145	1.102	.003	.79	1.26
	Reliability	.032	.012	.204	1.146	.000	.86	1.17
	Responsiveness	.295	.014	.502	4.777	.000	.75	1.33
	Assurance	-.007	.014	-.020	-.519	.531	.74	1.36
	Empathy	.008	.014	.022	-.556	.018	.74	1.36

Dependent Variable: Customer satisfaction

Table 4.8 showed the standardized beta coefficients. A unit change in the independent variables (service quality dimensions), would produce an effect on the dependent variable (customer satisfaction).

From this table, responsiveness (β=0.502, p<0.01), reliability (β=0.204, p<0.01) and tangibility (β=0.145, p<0.01) had the highest impact on customer satisfaction. The largest t values for responsiveness (t=4.777), reliability (t=1.146) and tangibility (t=1.102) and their corresponding low p values (p<0.01 for all) supported for which there were high beta coefficients.

Service quality dimensions (tangibility p<0.01, reliability p<0.01, responsiveness p<0.01, and empathy; p<0.05) have positive and significant effects on customer satisfaction. On the other hand, assurance has a negative and statistically insignificant influence on customer satisfaction.

Hypothesis testing- Hypothesis testing is based on standardized coefficients beta and P-value to test whether the hypotheses are rejected or not. The table 4.9 below showed the summarized results of the hypotheses tested against the p values in the previous tables.

Table 4.9 summary of hypotheses testing

customer satisfaction (Model)	**R^2**	**β**
Tangibility - Customer Satisfaction		.145**
Reliability- Customer Satisfaction		.204**
Responsiveness - Customer Satisfaction	79.2%	.502**
Assurance - Customer Satisfaction		-.020
Empathy- Customer Satisfaction		.022*

Note: ** p<0.01; *p<0.05

Table 4.9 depicted that Customer Satisfaction is individually and co-jointly predicted by Tangibility (β=0.145, p<0.01), Reliability (β=0.204 p<0.01), Responsiveness (β=0.502, p<0.01), Empathy (β=0.022, p<0.05), and Assurance (β=-0.020, p>0.05; statistically insignificant). These variables together explain 79.2% of the variance on Customer Satisfaction.

Hypothesis 1: Tangibility of ATM service has a positive and significant effect on customer satisfaction in Ethiopian Commercial banks.

Table4.9, revealed that tangibility has a positive and significant effect on customer satisfaction with a beta value (**β** = 0.145), at 99% confidence level (p < 0.01). Therefore, it was accepted that, tangibility has a positive and significant effect on customer satisfaction.

Hypothesis 2: Reliability of ATM service has a positive and significant effect on customer satisfaction in Ethiopian Commercial banks.

Table 4.9 showed that the standardized coefficient beta and p value of reliability were positive and significant (**β** = 0.204, p < 0.01). Thus, it is accepted that, reliability has a positive and significant effect on customer satisfaction.

Hypothesis 3: Responsiveness of ATM service has a positive and significant effect on customer satisfaction in Ethiopian Commercial banks.

Table 4.9 also indicated that, responsiveness has a positive and significant effect on customer satisfaction with a beta value (**β** = 0.502), at 99% confidence level (p < 0.01). Therefore, responsiveness has a positive and significant effect on customer satisfaction.

Hypothesis 4: Assurance of ATM service has a positive and significant effect on customer satisfaction in Ethiopian Commercial banks.

As shown in table 4.9, p-value is not significant (p > 0.05), and the beta value of assurance was negative (**β** = -0.020). Therefore, this hypothesis is rejected.

Hypothesis 5: Empathy of ATM service has a positive and significant effect on customer satisfaction in Ethiopian Commercial banks.

Similarly on table 4.9 also indicated that, the standardized beta and p - value of empathy were positive (**β** = 0.022), and significant at 99% confidence level (P < 0.05). As a result, it was accepted that empathy has a positive and significant effect on customer satisfaction.

1.1.2. Discussion

The result of this study indicated that tangibility has a positive and significant effect on customer satisfaction. This finding was supported by Kassa (2012), Al Hawary et al (2011) & Munusamy et al (2010). However, as cited by Kassa (2012), contradicted found by Malik et al, (2011) reported that tangibility has no contribution to customer satisfaction.

The found also indicated that reliability has a positive and significant effect on customer satisfaction which was similar found by (Kassa, 2012; Al-Hawary et al., 2011; & Malik et al., 2011, Idowu & Fadiya, 2015 and Narteh, 2013). On the other hand, Munusamy et al., (2010) reported that reliability has a negative and insignificant effect on customer satisfaction. In line with found by (Idowu & Fadiya, 2015, Narteh , 2013, and Al-Hawary et al., 2011), the found of this study showed that responsiveness has a positive and significant effect on customer satisfaction. However, this result is different from results by Mohammad and Alhamadani (2011), which found a positive but insignificant effect on customer satisfaction and also absolutely opposed by Kassa (2012) reported a negative and insignificant effect on customer satisfaction. Moreover, the result indicated that assurance has a negative and insignificant effect on customer satisfaction and was supported by Idowu & Fadiya (2015). However, contradicted by Malik et al., 2011, Al-Hawary et al., 2011 and Kassa, 2012). The found also indicated that empathy has a positive and significant effect on customer satisfaction and similar to found by Mohammad and Alhamadani (2011). On the contrary Munusamy et al., (2010) found that empathy has a negative effect on customer satisfaction.

In overall, the results revealed that all independent variables accounted for 79.2% of the variance in customer satisfaction (R^2 = 0.792). Thus, 79% of the variation in customer satisfaction can be explained by the five service quality dimensions.

Moreover, study found out that not all of the service quality dimensions have positive effects on customer satisfaction. Out of the five service quality dimensions four dimensions (tangibility, reliability, responsiveness and empathy) have positive and significant effects on customer satisfaction. On the other hand, assurance has a negative and insignificant effect on customer satisfaction. The results of this study further indicated that responsiveness is the most important factor to have a positive and significant effect on customer satisfaction followed by reliability and tangibility.

Conclusion- Unlike assurance, the tangibility, responsiveness, empathy and reliability are positively and significantly related with customer satisfaction. Tangibility, reliability, responsiveness and empathy have positive and significant effect on customer satisfaction, especially customer satisfaction was highly affected by responsiveness.

Recommendations- Banks ought to have its own ATM technicians in order to assuredly give service and maintain machines immediately.

The bank management should increase the ATM machine access in every of their branches and some selected areas like hospital, shop and hotels.

Ethiopian commercial banks should give training to employees how to treat the customers and how to solve the ATM banking service problems.

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