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Boateng, Elliot and Amponsah, Mary and Serwaa-Adomako, Akosua

Graduate Studies, Department of Economics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

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**Impact Assessment of ATM on Customer Satisfaction of Banks in Ghana: A Case Study of Kumasi, Ghana.**

Elliot Boateng<sup>1</sup>, Mary Amponsah<sup>2</sup>, Akosua Serwaa-Adomako<sup>3</sup>

<sup>1,2,3</sup>Graduate Studies, Department of Economics, Kwame Nkrumah University of Science and Technology,  
Kumasi, Ghana

Emails: [elliottb2005@yahoo.com](mailto:elliottb2005@yahoo.com) ; [amponsah.mary@yahoo.com](mailto:amponsah.mary@yahoo.com) ; [jserwaaadomako@yahoo.com](mailto:jserwaaadomako@yahoo.com)

<sup>1</sup>**Correspondence:** [elliottb2005@yahoo.com](mailto:elliottb2005@yahoo.com)

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**Abstract**

Bank customers are selective with the banks to transact with since everyone wants the best service for their money. As a result, there is competition in the banking sector. Each bank wants to give quality services and products to keep up existing customers and broaden their customer base as well. The purpose of this study is to find out if customer needs for direct service transactions with bank employees in the banking halls has reduced due to Automated Teller Machines (ATM) provided for Ghanaians at customer service points. The essential dimensions of an ATM service quality and its effect on customer satisfaction is also examined. Questionnaires were administered to users and non-users of Automated Teller Machines, as well as bank staffs, to source data for the study. An analysis of data was done with descriptive statistics and the chi - square test. About the scope of the study, the results showed that, the demand for direct service transactions with bank employees had reduced with the ATM introduced in Ghana. ATM service quality dimensions that produced an effect on customer satisfaction were the reduced time spent on transactions, delivery of renewed ATM cards on time as well as safety during withdrawals at ATM service points. In conclusion, when Banks in Ghana enhance on the ATM service quality dimensions that impact on customer satisfaction, they shall increase their customer base, cut workload on bank staff and increase their turnover.

**Keywords:** automated teller machine, customer satisfaction, service quality

## INTRODUCTION

Automated Teller Machines are mechanical devices that offer a variety of routine banking services without a human teller. It basically allows bank customers to withdraw money from their accounts 24 hours daily. The banking sector introduced the usage of Automated Teller Machines to conveniently serve their customers and so become more competitive and increase their profit base. This is because; the traditional banking delivery services caused almost all banks to deliver less effective and less satisfactory services to clients. However, in developing countries, poor electronic communication networks, internet and computer illiteracy may limit the benefit of ATM to both banks and customers than in the advanced countries. These situations have led to many questions about whether ATM would enhance customers' satisfaction as well as cut workload in the banking hall.

The question now is, has customer behaviour towards service requirements been influenced with ATM introduced by Ghanaian banks and by implication, reduced employee workload and improved the efficiency and effectiveness of their service delivery in the banking halls?

Most researchers have sought to find answers to this question. Some have centered on to rate customer satisfaction while others concentrate on the effectiveness of their service delivery in the banking hall. Komal and Singh (2009) did a comparative study of three banks to find out about the impact of ATM on customer satisfaction. The main reason for the study was to assess the level of satisfaction customers derive in the industrial credit and Investment Corporation of India, the State Bank of India as well as Housing Development Finance Corporation in India. According to the study, customer satisfaction was a major reason in measuring the performance level of banks. The two classifications of satisfaction were Material customer satisfaction and abstract customer satisfaction. Fees charged for using ATM, frequency of facing problems with the use of ATM and post purchase behaviour of customers were the variables analysed under the Material Customer Satisfaction. About Abstract Customer Satisfaction, factors affecting the choice of ATM, purpose for the usage of ATM and problems faced while using ATM were the variables used. With the use of F-test, it was found out that customer satisfaction derived in the three banks was different and this was because of the variation in the ATM service quality.

Olatokun and Igbinedion (2009) applied the theory of diffusion of innovation to explain the take on of automated teller machines in Nigeria. The focus was to find out the extent that attributes such as observability, complexity, testability, compatibility, as well as relative advantages, effected a change in the attitude and intention to use an ATM by customers. From the study, all the attributes much influenced the use of Automated Teller Machine. In order of intensity, observability was the first variable that influenced the adapting of the ATM in Jos, Nigeria. This was because; the public demanded the use of the ATM when they visibly saw others benefited from its usage. Next is the compatibility which was customers' demand for the use of the ATM when they noticed it fits their local values and customs. Third, was the relative advantage where there was a diffusion of ATM because it was seen to be better off and easier to use than the traditional way of banking. Complexity was the fourth variable that affected customer's intent to use ATM because the people of Jos had little or no difficulty with the use of ATM. Testability was the last variable that affected customers' intent to use an ATM because customers already had prior knowledge on the use of ATM and didn't have to try before adopting its usage.

Again, in Pakistan, there has been a drastic increase in the diffusion of ATM since the year 2000. This is because of the introduction and spread of Information and telecommunication technologies in their banking sector. Withdrawals, payment of utility bills, balance inquiry and even transfer of funds are some

duties that may be undertaken with the use of an Automated Teller Machine in Pakistan. With the use of the convenience sampling technique, Khan (2010) distributed 500 questionnaires to ATM card users from multinational and national banks in Pakistan. The study revealed that the ATM service quality resulted in customer satisfaction. Convenience, reliability, responsiveness, efficient operation and lastly security and privacy were the order that the service quality dimensions affected their satisfaction.

In trying to find out the customer satisfaction in ATM service about both private and public banks in India, Kumbhar's (2011) study concluded that ATM users of private banks were more satisfied as compared to their counterparts in public banks. Attention was drawn to the increase in satisfaction derived by ATM users in both private and public banks if ATM service charges were reduced. Aminu and Arhin (2011) showed that irrespective of all these attributes of the ATM service delivery, bank customers still underutilized the ATM service capacity by queuing in the banking halls to make cash withdrawals even when the amount may be withdrawn from the ATM. This, according to the study does not help to cut the workload of bankers, especially in developing countries, which make the use of ATM less beneficial to the banks.

It should be noted that, most of these studies on customer satisfaction with the use of ATM have been undertaken in advanced countries that are technologically well advanced than developing countries. In view of this, it makes it difficult to accept that customers responds to ATM use is the same in developing countries, hence the need to investigate into that.

The purpose of this study was to find out the main reason backing the implementation of the use of ATM and analyse whether those motives meet customer satisfaction. Essential dimensions of ATM service quality were closely looked at to assess their influence on customer satisfaction in the banking sector of Ghana.

Some specific goals delved into were:

- i. Class of customers that use the ATM.
- ii. Knowledge customers had on the use of ATM.
- iii. Assessment of the level of customer satisfaction between users and non-users of ATM about transaction time.

The study was of significance since it is still observed that banks have customers transacting directly with tellers and queues are not a thing of the past even in the face of ATM introduced.

The study, therefore, hypothesized that, ATM has a positive impact on customer satisfaction than the traditional way of banking.

Again, the service quality of the ATM has a positive effect on customer satisfaction.

## METHODOLOGY

### Population and Sample:

The population was denoted by N and was about 47,000. Using a margin of error (e), the formula below was used to find the sample size.

$$\frac{N}{1+N(e^2)} \quad (1)$$

Using the formula above, a 6% margin of error generated a sample size of 276. However, considering the available resources for the study, engaged schedule of the target group and not having the luxury of time, the sample size was narrowed to 200. The sample was selected randomly.

The target group that information was collected from were customers of banks at the Kwame Nkrumah University of Science and Technology (KNUST) campus and off-campus banks in Kumasi. This was to prevent skewing the research population to staff and students on campus, but to have a general overview of customer satisfaction with various groups of people. Cal Bank and Barclays bank were the selected banks on KNUST campus while Atwima Kwanwomma Rural Bank, the Kumawuman Rural Bank and The Trust Bank were the off-campus banks in Kumasi selected for the study. In all, thirty-nine customers and one management staff were selected from the banks.

#### Data source and Analysis:

Primary data were sourced from customers and bank staff with the use of questionnaires that had both closed and open-ended questions. This enabled the bank customers to freely express their views on their level of satisfaction with the services rendered them. Also, secondary data were extracted from the website, banks' journals and other publications.

The analysis was guided by the goals of the research and was done with the use of Statistical Package for Social Sciences. A descriptive data involving frequencies, tables and bar graphs were used to show a clear visual analysis of the data. The chi-square test was used to decide whether the service quality variables used for the study was dependent.

#### RESULTS

Out of the 200 questionnaires that were administered, 169 were returned. 164 of the returned questionnaires were filled by customers while the remaining 5 form bank staff of the various banks used for the study. Guided by the goals of the study, the analysis below was drawn from the data collected.

#### CLASS OF CUSTOMERS THAT USE ATM:

One of our goals was to find out the class of customers that use the ATM and this is illustrated in Table 1.1.

**Table 1.1 a table showing the class of customers that use the ATM**

		BANK CUSTOMERS	
		ATM users	Non- ATM users
GENDER	Male	50%	66%
	Female	50%	34%
<b>Total</b>		<b>100%</b>	<b>100%</b>
AGE	Up to 30years	94%	69%
	30-60 years	6%	27%
	Above 60 years	0%	4%
<b>Total</b>		<b>100%</b>	<b>100%</b>
HIGHEST EDUCATIONAL LEVEL ATTAINED	Primary	1%	5%
	Secondary	4%	23%
	Tertiary	93%	64%
	Vocational	0%	4%
	Others	2%	4%
<b>Total</b>		<b>100%</b>	<b>100%</b>

OCCUPATION	Employer	5%	16%
	Student	71%	46%
	Service	23%	31%
	Unemployed	1%	7%
<b>Total</b>		<b>100%</b>	<b>100%</b>
INCOME LEVEL	Dependent	61%	32%
	Below ₱200	11%	27%
	₱200 – ₱500	9%	28%
	₱500- ₱1,000	12%	13%
	Above ₱1, 000	7%	0%
<b>Total</b>		<b>100%</b>	<b>100%</b>

Source: Field Study, 2012

From Table 1.1, it may be seen that there is a 50% balanced representation of men and women that use the ATM. However, more men, representing 66% as compared to 34% of women do not use the ATM. Over 90% of the ATM users were up to 30 years and had their highest education being at the tertiary level. On the other hand, even though 69% of the non-ATM users were up to 30 years, over 30% belonged to the age bracket of 30 years and above. 71% of the ATM users were students as compared with only 46% of non-ATM users being students. 61% of the ATM users were dependent on others for income while only 32% of the non-ATM users were dependent on others for income.

#### Knowledge Customers Have on the Uses of the ATM

With using the ATM to make withdrawals being the main functionality customers know of, there was the need to find out if ATM users had knowledge on the other functions of the ATM. This is illustrated in Table 1.2.

**Table 1.2 a table presenting the knowledge customers have on the uses of the ATM**

Description	Response of ATM Users	
	Yes	No
To make withdrawals	100%	0%
To check account balance	93%	7%
For cash transfer	7%	93%
For making payments	7%	93%
To top-up call credit	1%	99%
For checking bank statement	51%	49%

Source: Field Study, 2012

It is shown in Table 1.2 that, most of the ATM users had less knowledge on the diverse functions the ATM may do aside it being used for withdrawals. Among the many functions that ATM serves, 93% of the users knew of and had used it for account checking while 51% had used it for checking bank statement. However, only 7% knew it could be used to transfer cash and make payments while 1% knew it could be used to top-up call credit.

**Level of Customer Satisfaction between Users and Non-Users of ATM about Transaction Time**

Since ATM was introduced to cut the time spent in transacting directly with bank tellers, a focus point of the study was to compare with how long it took both ATM and non-ATM users to make transactions. This is presented in Table 1.3.

**Table 1.3 a table showing the level of customer satisfaction between users and non-users of ATM about transaction time.**

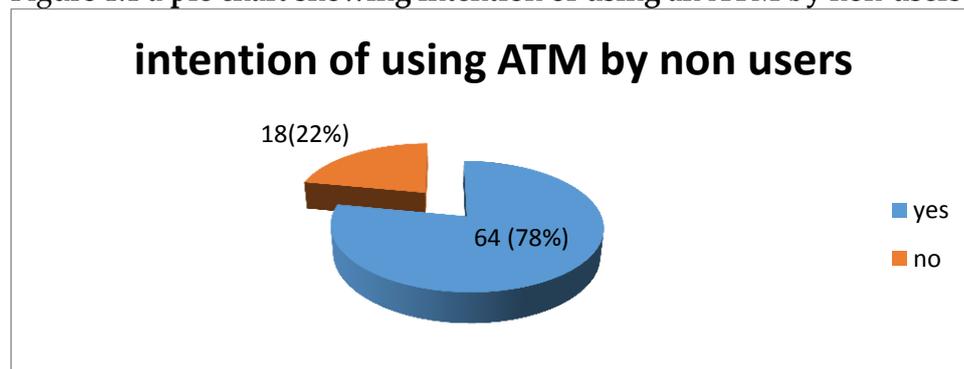
Transaction time	Bank Customers	
	ATM users	Non-ATM users
< 30 minutes	81	54
30 minutes - 1 hour	1	15
1 – 2 hours	0	8
2 hours	0	5
<b>Total</b>	<b>82</b>	<b>82</b>

**Source:** Field Study, 2012

From Table 1.3, it is shown that 81 out of the 82 ATM users spent less than 30 minutes with their transaction while only 1 spent between 30 minutes to an hour. However, even though 54 out of the 82 non-ATM users spent less than 30 minutes with their transactions, 15 spent between 30 minutes to an hour, 8 spent between an hour and two while 5 others spent 2 hours with their transactions.

It is only a less satisfied or dissatisfied customer that would be willing to change from one service to another. The study tried to find out if none ATM bank customers were satisfied transacting directly with tellers or had any intention of diverting to the use of ATM. Figure 1.1, shows ATM users with the intent of using an ATM.

**Figure 1.1 a pie chart showing intention of using an ATM by non-users**



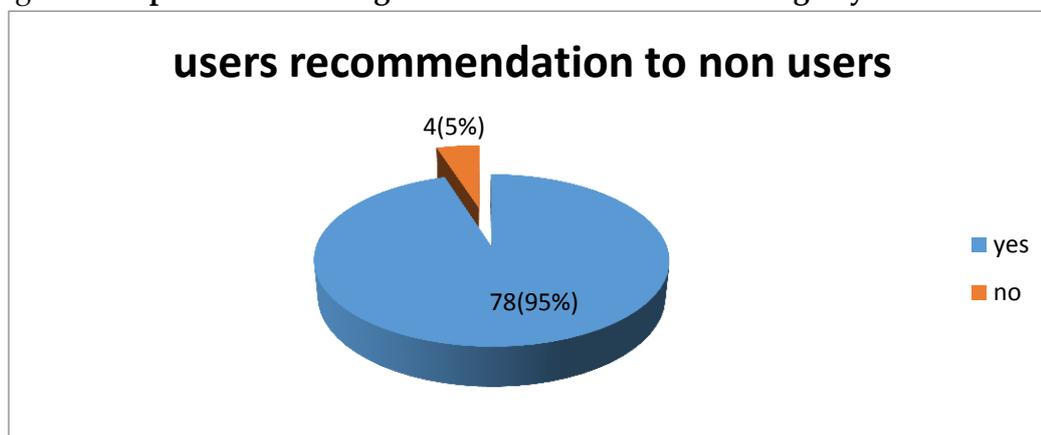
**Source:** Field Study, 2012

From Figure 1.1 it can clearly be seen that, out of the 82 non-ATM users, 64 (78%) have the intent of using ATM while only 18 (22%) had no intention of diverting from transacting directly with bank tellers to the usage of ATM.

Also, since it is only a satisfied customer that would be willing to recommend an experience to another; the study tried to find out if customers were satisfied with the use of ATM and hence had any intention of

recommending its use to others. ATM users that recommend the use of ATM to non-users are illustrated on Figure 1.2.

Figure 1.2 a pie chart showing recommendation of ATM usage by users to non-users



Source: Field Study, 2012

From Figure 1.2, out of the 82 ATM users' respondents, 95% of them recommend the use of ATM to non-users while only 5% had no intention of recommending ATM to non-users.

### Essential Dimensions of ATM Service Quality

Service quality involves a comparison of expectations with performance. It is often used to perform a gap-analysis of service quality performance of organizations against customer service quality needs. For the purpose of this study, the service quality dimensions that were analysed were: ATM transaction time, delivery of renewed ATM cards on time, the functioning of ATM always, availability of cash in ATM always and safety during withdrawal. A chi-square test of independence was used to find out the service quality dimensions that impacted on satisfaction.

#### I. Customer Satisfaction and Transaction time

H<sub>0</sub>: customer satisfaction and ATM transaction time are statistically independent

H<sub>1</sub>: The two variables are statistically dependent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.501 <sup>a</sup>	8	.006
Likelihood Ratio	11.344	8	.183
N of Valid Cases	82		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is 0.06.

Source: Field Study, 2012

Since the calculated value (Pearson Chi – square value) of 21.501 is greater than the table value of 15.5073; we reject the null hypothesis at a 0.05 significance level. Hence, customer satisfaction and the time it takes to make a transaction with ATM are dependent. This implies that customer satisfaction depends on the time it takes to perform a transaction with ATM.

**II. Customer Satisfaction and Delivery of renewed ATM cards on time**

H<sub>0</sub>: customer satisfaction and delivery of ATM card on time are statistically independent

H<sub>1</sub>: The two variables are statistically dependent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.568 <sup>a</sup>	8	.049
Likelihood Ratio	16.460	8	.036
N of Valid Cases	82		
a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is 0.67.			

**Source:** Field Study, 2012

Since the calculated value (Pearson Chi – square value) of 15.568 is greater than the table value of 15.5073; we reject the null hypothesis at a 0.05 significance level. Hence, customer satisfaction and delivery of ATM card on time are dependent. Therefore, customer satisfaction depends on delivery of ATM card on time.

**III. Customer Satisfaction and Functioning of ATM always**

H<sub>0</sub>: customer satisfaction and ATM functioning are statistically independent

H<sub>1</sub>: The two variables are statistically dependent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.639 <sup>a</sup>	4	.620
Likelihood Ratio	2.979	4	.561
N of Valid Cases	82		
a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is 0.49.			

**Source:** Field Study, 2012

Since the calculated value (Pearson Chi – square value) of 2.639 is less than the table value of 9.48773; we do not reject the null hypothesis at a 0.05 significance level. Hence, customer satisfaction and ATM functioning are independent. Therefore, customer satisfaction does not depend on ATM functioning.

**IV. Customer Satisfaction and Availability of cash in ATM always**

H<sub>0</sub>: customer satisfaction and availability of cash are statistically independent

H<sub>1</sub>: The two variables are statistically dependent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.054 <sup>a</sup>	4	.282
Likelihood Ratio	4.953	4	.292
N of Valid Cases	82		
a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.46.			

**Source:** Field Study, 2012

Since the calculated value (Pearson Chi – square value) of 5.054 is less than the table value of 9.48773; we do not reject the null hypothesis at a 0.05 significance level. Hence, customer satisfaction and availability of cash are independent. This means that customer satisfaction does not depend on the availability of cash.

### V. Customer Satisfaction and Safety during withdrawal

H<sub>0</sub>: customer satisfaction and safety during withdrawals with ATM are statistically independent

H<sub>1</sub>: The two variables are statistically dependent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.444 <sup>a</sup>	4	.034
Likelihood Ratio	12.254	4	.016
N of Valid Cases	82		
a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.22.			

**Source:** Field Study, 2012

Since the calculated value (Pearson Chi – square value) of 10.444 is greater than the table value of 9.48773; we reject the null hypothesis at a 0.05 significance level. Hence, customer satisfaction and safety during withdrawals are dependent. Therefore, customer satisfaction depends on safety during withdrawals.

### DISCUSSIONS

From the descriptive analysis, it may be concluded that the usage of ATM has a positive impact on customer satisfaction than the traditional way of banking. This is because, most of the users have post purchase behaviour of recommending the use of ATM to non-users owing to the high impact ATM has on their satisfaction. Also, most of the non-users of ATM have the intent of diverting to the usage of ATM. The chi-square test analysis about the service quality dimensions also revealed that, customer satisfaction depends on transaction time, delivery of renewed ATM cards on time and safety during withdrawals. However, with respect to the area of study and respondents, customer satisfaction is not dependent on cash being available in the ATM always or functioning of the ATM.

## CONCLUSION AND RECOMMENDATION

This research paper provides more insights into the challenges of using ATM as a customer service delivery tool. This is significant because the usage of ATM by bank customers may serve as a strategic tool for relieving banks tellers of their workloads. The findings obtained may be used to sustain customers' interest and support in ATM usage as well as help relieve the workload of tellers servicing other customers in the banking halls.

In order for banks to be competitive and increase their profit base without compromising on customer satisfaction, it is recommended that service quality dimensions need to be enhanced on. Also, more publicity and education on the usage of ATM needs to be done to get all people belonging to the 30 years and above age bracket. This is important for those who fall within this age group since they are not well-informed into the usage of ATM hence find it difficult to work on it to help efficient transactions. Again, those with little or no education as well as all those in the working force should be first introduced to the usage of ATM before they use it. In other words, users of the ATM need to be taken through the various features of the ATM and if done appropriately, they shall use the machine with less difficulty. This will in effect reduce the workload of bank tellers while enhancing on customer satisfaction. There should also be tight security at places where ATMs are situated to boost users' confidence. Bank officials must make sure that renewed ATM cards are delivered to users on time. Finally, more ATM should be available at vantage points such as gas filling stations, shopping malls, market centres and various campuses. This is important since customers would be better able to reach it quickly and shall also boost the services of the banks.

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