

The Effect of the Adoption of ICT on the Monetary Performance of Rural Banks in Ghana: A Case Study of Chosen Rural Banks in Eastern Region

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Abstracts: It is actually true that Information and communication technology (ICT) has for the last two years become extremely widespread with key commercial banks in Ghana. Recently, a lot of the rural banks have also computerized and networked their procedures and several more gearing up to be computerized. Therefore, on the part of ARB Apex Bank, with the help of Bank of Ghana, they will be embarking on national computerization of all the rural banks in Ghana. Henceforth this research work focuses on examine the connection between the ICT usage and the monetary performance of the rural banks from the viewpoint of four computerized rural banks, namely; Atiwa West; Atiwa East; Osino; and Abirim Rural Bank. The opinions of the management staff of the rural banks, branch managers, staff members and customers were gathered using a survey method. Total number of 212 people were sampled from the four Rural Banks. Hence, interviews were passed out to gather data from major stakeholders in the computerized rural banks. Also, three kinds of questionnaires were set and dispersed among management and head office staff, branch managers and branch staff. Again, semi-structured and 5-point Likert scale assessment were developed. Additionally, data analysis was made using linear regression and Analysis of Variance (ANOVA). The analysis shown that ICT usage "ICT application, ICT literacy and attitude towards ICT" has a positive linear connection with the financial performance in terms of deposit mobilization, profit and loan recovery of the rural banks.

Keywords: Eastern Region, Effect, Ghana, ICT, Linear regression, Monetary Performance, Rural Banks.

1. INTRODUCTION

Almost all the outdated banks in Ghana are spending big sums of money in attainment of IT tools, networking their various branches and hiring of IT personnel to manage them. And so, these combined with the high cost of coaching staff to use IT tools negatively influence the balance sheet of the banks in the short run. Additionally, these traditional banks get a number of ATM machines, Computers and costly software, giving out electronic cards, etc. all at an expense to the banks. Thus, making the rural banks spend a lot of money on IT equipment's and its usage as stated by [16].

More so, Rural banks in Ghana have lately adopted computerization of their firms like these traditional banks. Due to that, it has become needed to find out whether ICT really has positively effect on the monetary performance of these rural banks to worth the cost related to it. Several managers of the numerous rural banks in Ghana are now thinking of embracing ICT for their daily operations. And so, one may ask; what is the effect of ICT on the mobilization of deposits in the rural banks? Is there any major relationship between ICT adoption and the cost-effectiveness of the rural banks? Has ICT usage any effect on the credit administration of the rural banks? The key aim of this research is to evaluate the effect of the adoption of ICT by the rural banks on their monetary performance. The specific objectives are; to assess the effect of ICT on mobilization of deposits; to evaluate the effect of computerization on the recovery of loans; to assess the impact of computerization on the profitability of the rural banks. The study focuses on the monetary performance of the rural banks as noticed by the staff and management as a result of the usage of ICT. Again, the rural banks have been intentionally chosen because until early 2004 none of the rural banks in Eastern Region had been computerized. Thus, [9] established a positive connection between ICT and bank branch performance in the emerging markets. This study seeks to confirm as to whether this connection exists in rural banks in the Eastern Region of Ghana.

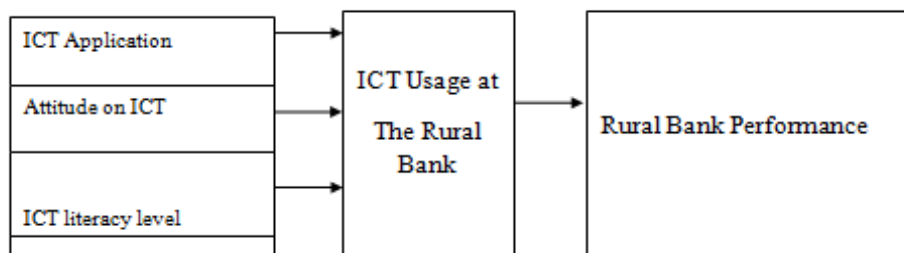
2. LITERATURE REVIEW

Information communication and technology (ICT); is the infrastructure and components that enable modern computing. Again, IT is generally meant to as computers and a range of peripheral equipment. Thus, the most noticeable example is perhaps the banking sector, where through the introduction of IT associated products in internet banking, electronic payments, security investments, information exchanges, banks now can offer more separate services to clients with less manpower [2]. Also, "Telebanking (telephone banking) can be considered as a system of remote or virtual banking, which is basically the transfer of branch financial services via telecommunication devices where the bank clients can do retail banking transactions by calling a touch-tone phone or mobile communication unit, which is connected to a computerized system of the bank by using Automated Voice Response (AVR) technology" [1]. Information and communication technology for banks has took banking commodities in the way of individual computer banking, internet banking and electronic funds transfers amid others as proved in the study of [1], [3] then [5].

ICT and Banks' Monetary Performance: In overall, current findings have established two positive effects concerning the relationship between IT and banks' monetary performance; First and foremost, IT can decrease banks' operational costs (the cost advantage). Lastly, IT can help transactions among clients in a similar network (the network effect) [6], [7], [4]. Truly, [11], using data for United States commercial banks for the period 1971-1979, presented that the concern of network effect is significant in the ATM adoption of United States commercial banks and this was also supported by [10]. Again, there are some studies agreeing with the positive effect of IT spending to business value. Thus, [8] assesses the impact of the progress in IT on the profit and cost efficiencies of the US banking industry during the period of 1992-2003. The study shows a positive relationship between the levels of implemented IT and both profitability and cost savings. And so, a research conducted by [9] also confirms a positive linear relationship between ICT usage and bank's monetary performance (deposit mobilization, loan recovery and profit). [13] learned 12 banks operating in the US for the year of 1989-1997 and discovered that although IT has been one of the most marginal useful factors among all inputs, it cannot increase banks' profits. Some studies echo the so-called Solow Paradox says that ICT will actually slow productivity. As said by [14], "you can see the computer age everywhere these days, except in the productivity statistics" [2], [15]. Hence, the differences in empirical outcomes may be as a result of the different econometric methodologies used.

3. THEORETICAL FRAME

A study done by [9] studied the impact of ICT on bank branch performance. They described that ICT application at the bank divisions includes three essentials; ICT application, ICT literacy of staff and clients, and attitude of staff and customers regarding ICT. They adopted Pearson's correlation coefficient to measure the linear relationship between variables. The analysis disclosed that ICT usage has a positive linear relationship with monetary performance and quality performance of bank branches. They went ahead to developed a conceptual framework for the research investigation and this framework is adopted as follows;



Source: Maldeni and Sanath (2009)

Figure 1: Framework for the research investigation

The ICT adoption is evaluated as the scope of ICT functions, accessibility of internet, level of e-mail message and level of Microsoft office package application. The attitude to ICT includes attitude of branch administrators regarding ICT usage, attitude of branch staff to ICT usage, attitude of clients to ICT application. [9] also defined the IT literacy level as ICT literacy level of administrator, ICT literacy level of office staff and ICT literacy level of customer.

4. DATA GATHERING PROCESS

This presents a brief analysis of data along with a discussion of each research question with corresponding statistical analysis.

Thus, a case study research design within Eastern Region was used for the study in order to carry out a complete valuation of the effect of ICT on the monetary performance of rural banks. Nevertheless, its drawback of limited extrapolation, this design was embraced because it is one of the finest for getting reliable and relevant research results for application to similar organizations. [12], a total population of ten Rural Banks in Eastern Region was targeted for the study. This is because only ten out of the thirty rural banks in the Eastern Region have fully computerized and networked and for that reason qualified for this study. Again, a purposive sampling technique was used to select four computerized Rural Banks in four different districts in Eastern, namely; Atiwa West; Atiwa East; Osino; and Abirim Rural Bank. Random sampling was employed in choosing the customers who have been with their respective banks for 5 years or more (respondents). Management and staff were also interviewed. In total, 212 people were sampled from the 4 Rural Banks. Interviews were passed out to gather the data from main stakeholders in the electronic rural banks. Three kinds of questionnaires were arranged and disseminated amid management and head office staff, branch managers and branch staff, and customers. Both semi-structured and 5-point Likert scale questionnaire were established. Data was examined with the use of SPSS package. Also, Linear regression analysis was used to show the effect of ICT on the dependent variables; deposit deployment, loan recovery, profit and service delivery. Again, ANOVA (analysis of variance) was also employed because data was definite and ordinal or nominal [12]. The independent variables; ICT usage, ICT literacy of staff and clients, and attitude of staff and clients towards ICT were run on deposit, profit, loan recovery, and service delivery to measure the effect each of the ICT variable has on the dependent variables. Therefore, the effect of ICT on the total performance of the rural banks was also examined.

5. ANALYSIS, RESULTS AND DISCUSSIONS

Effect of ICT Adoption on the Deposit Mobilization of Rural Banks.

This part explains how the adoption of ICT by the Rural Banks affects their main performance indicators. So, the main performance indicators are deposit mobilization, profitability, loan advances and service delivery. Figure 1 in appendix A describes how ICT adoption by the Rural Banks affects their deposit mobilization. Staff of chosen Rural Banks rank effect of ICT on deposit mobilization as follows; ICT usage (56.5%), ICT literacy (2.7%) then attitude regarding ICT (38.5%), whereas the use of ICT and attitude regarding ICT are statistically significant in describing the variations in deposit mobilization of the Rural Banks. Therefore, it can be seen from the figure that a 1% change in the use of ICT will trigger 0.565% change in the deposit deployment of the Rural Banks. Again, it can also be seen that ICT literacy has the smallest effect on deposit deployment and IT application has the highest (56.5%) effect on deposit mobilization. Henceforth, if authorities of the various banks want to increase deposit then they should focus more on the application of ICT.

Effect of ICT Adoption on the Deposit Mobilization of the Rural Banks

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .085 | .083 | . | 1.025 | .307 |
| Do you agree ICT application has an effect on deposit mobilization in this Bank? | .0565 | .037 | .0575 | 15.234 | .000 |
| Do you agree ICT literacy has an effect on deposit mobilization in this Bank? | .027 | .021 | .027 | 1.291 | .198 |
| Do you agree attitude toward towards ICT has an effect on deposit mobilization in this Bank? | .385 | .036 | .412 | 10.693 | .000 |

Figure 2: ICT Adoption on deposit mobilization

a. Dependent Variable: The bank deposits base has risen because of the ICT adoption.

Source: Authors field report

ANOVA 1

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|---------|------|
| 1 Regression | 52.007 | 3 | 17.336 | 855.252 | .000 |
| Residual | 3.973 | 196 | .020 | | |
| Total | 55.980 | 199 | | | |

a. Predictor: (Constant), Do you agree attitude towards ICT has an effect on deposit mobilization in this Bank? Do you agree ICT literacy has an effect on deposit mobilization in this Bank? Do you agree ICT application has an effect on deposit mobilization in this Bank?

b. Dependent Variable: The bank deposits base has risen because of the ICT adoption.

Source: Author's field report

The ANOVA figure above depicts that the model is statistically significant. It means that the model is good for describing the variation of deposit mobilization by the various Rural Banks. Hence, the adoption of ICT is a serious success element in the mobilization of deposit for the Rural Banks.

Model Summary 1

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .964 | .929 | .928 | .14237 |

The above model summary shows that the model describes the variations in the deposit mobilization of the Rural Banks by 92.9%. And so, ICT application, ICT literacy and attitude towards ICT in all describes the variations in deposit mobilization by 92.9%, thus all other things assumed constant.

6. EFFECT OF ICT ADOPTION ON PROFIT OF THE RURAL BANKS

The figure 3 below in appendix A also displays how the use of ICT by the Rural Banks affects their profitability. The rating of ICT application, ICT literacy, and attitude towards ICT puts ICT application as the best significant of all. That is to say that, a 100% change in ICT application will trigger a 39.1% change in the profits of the Rural Banks. Again, the

next to ICT application is ICT literacy (30.4%) followed by the attitude regarding IT (28.1%) and they are all statistically significant in describing the variations in the profits of the Rural Banks. More so, it can also be seen that while ICT application is the most important factor in describing variations in the profit, the ICT literacy and attitude towards ICT are similarly essential with 30.4% and 28.1% respectively. This can be accredited to the point that adoption of ICT itself is a cost and for that reason to be able to make enough income to balance the cost will need efficiency in the use of the ICT. Hence, management ought to equally pay attention to the ICT literacy and attitude of their staff towards the use of ICT.

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .085 | .083 | . | 1.025 | .307 |
| Do you agree ICT application has an effect on deposit mobilization in this Bank? | .0565 | .037 | .0575 | 15.234 | .000 |
| Do you agree ICT literacy has an effect on deposit mobilization in this Bank? | .027 | .021 | .027 | 1.291 | .198 |
| Do you agree attitude toward towards ICT has an effect on deposit mobilization in this Bank? | .385 | .036 | .412 | 10.693 | .000 |

Figure 3: ICT Adoption on Profit

a. Dependent Variable: Here, the rise in the profits can be credited to the greater degree to the inception of ICT by our bank.

Source: Author's field report

ANOVA 2

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|---------|------|
| 1 Regression | 72.447 | 3 | 24.149 | 1.069E3 | .000 |
| Residual | 4.428 | 196 | .023 | | |
| Total | 76.875 | 199 | | | |

a. Predictors: (Constant), Do you agree attitude regarding ICT has an effect on profit in this Bank? Do you agree ICT literacy has an effect on profit in this Bank? Do you agree ICT application has an effect on profit in this Bank?

b. Dependent Variable: The rise in the banks profit can be attributed to the greater extent to the introduction of ICT by our bank.

Source: Author's field report.

The ANOVA figure above shows that the model is statistically significant. This is true because the model is good fit in describing the variations in the profitability of the Rural Banks.

Model Summary 2

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .971 | .942 | .942 | .15031 |

Source: Author's field report

The model above summary illustrates that all the independent variables (ICT application, ICT Literacy and attitude towards ICT), all jointly describe the variations in the profitability of the Rural Banks by 94.2%, all other things been equal. Therefore, the managements of the Rural Banks are urged to spend in ICT if they want to increase profitability.

Effect of ICT Adoption on Loan Recovery of the Rural Banks

Figure 4 below in Appendix A explains how the adoption of ICT by the Rural Banks affects the checking and recovering of loans. So, the ranking of the main factors of ICT usage puts the attitude towards ICT (44.3%) as the highest in terms of the impact on loan recovery. Hence a hundred (100%) change in attitude towards ICT will trigger a 44.3% change in the recovery of loans. On the other hand, ICT literacy (27.9%) and ICT application (23.9%) followed respectively and they are all statistically significant. Moreover, the fact that attitude towards ICT was rated by the staff as the most vital may be credited to the fact, to be able to monitor and recover loans needs much attention and commitment. Meanwhile, according to the Credit Manager at Atiwa West Rural Bank, he has to supervise loans which are outstanding from his computer every day in order to check up on them. Therefore, to be fruitful in that regard will mean that you have to cultivate a positive attitude towards the use of ICT.

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .085 | .083 | . | 1.025 | .307 |
| Do you agree ICT application has an effect on deposit mobilization in this Bank? | .0565 | .037 | .0575 | 15.234 | .000 |
| Do you agree ICT literacy has an effect on deposit mobilization in this Bank? | .027 | .021 | .027 | 1.291 | .198 |
| Do you agree attitude toward towards ICT has an effect on deposit mobilization in this Bank? | .385 | .036 | .412 | 10.693 | .000 |

Figure 4: ICT Adoption on Loan Recovery

a. Dependent Variable: Here, the banks were able to recover their loans effectively with ICT than when there was no ICT (that is, occurrences of bad loans have minimized with the introduction of ICT).

Source: Author's field report

ANOVA 3

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|---------|------|
| 1 Regression | 69.780 | 3 | 23.260 | 1.169E3 | .000 |
| Residual | 3.900 | 196 | .020 | | |
| Total | 73.680 | 199 | | | |

Source: Author's field report

The ANOVA figure above depicts that the model is statistically significant. By this, it means that the model is suitable in explaining the variation in recovery of loans by the Rural Banks. So, the use of ICT is a serious success factor in the recovery of loans for the Rural Banks.

Model Summary 3

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .973 | .947 | .946 | .14106 |

Source: Author's field report

The model summary 3 shows that all the independent variables (ICT application, ICT Literacy and attitude towards ICT), all jointly describe the variations in the recovery of loans by the Rural Banks by 94.7% thus all other things been constant. Hence, the managements of the Rural Banks are urged to spend in ICT if they really want to increase the recovery of loans.

7. CONCLUSION

In conclusion, normally there is a significant positive effect of the adoption of ICT by the Rural Banks on their monetary performance which endorses [9] findings. And so, an additional analysis of the monetary performance (deposit mobilization, profit and loan recovery) with regard to ICT adoption (ICT application, Attitude towards ICT and ICT Literacy) shown the following:

1. There is a significant effect of ICT application and attitude towards ICT on deposit mobilization. So, it means that the rural banks can increase deposits by increasing ICT application and also a positive attitude by bank staff and clients towards ICT adoption will cause increase in deposits. Hence, this is statistically supported using regression analysis and it is consistent with the work of [9].
2. Also, the effect of the third independent variable, (ICT literacy level of staff and clients) about deposit deployment is not statistically significant which is also on the other hand consistent with [9]. With this, it's clear that all the three independent variables stated as ICT application, attitude towards ICT and ICT literacy have significant impact on the dependent variable profit [9]. Therefore, the effect of the ICT application and Literacy on profit is greater and it's statistically significant.
3. Again, it is consistent with the works of Kozak [8], [9].
4. Lastly, there is a significant positive connection between the ICT adoption and loan recovery as backed by [9].
5. Furthermore, all these three independent variables have an effect on the loan file of the rural banks and henceforth they are all statistically significant. Moreover, attitude of staff and customers regarding ICT has the greatest effect, followed by ICT literacy of staff and customers.
6. On the other hand, Rural bank credit officers now have easy access to adequate information on clients and with a click of the mouse can assess a customer for loan endorsements.
7. Again, time interval for loan approvals have enhanced significantly. Adding to that, monitoring and recovering of loans are also done simply, hence decreasing the occurrences of bad loans significantly. All these can be attributed to the use of ICT the by banks.

It can be concluded that, the results of the paper proven a positive effect on deposit mobilization, loans recovery and profitability of rural banks in Eastern Region more precisely in the chosen rural banks which were in connection with the objectives of this paper.

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