Impact of ICT on the Financial Performance of Rural Banks in Ghana: A Case Study of Selected Rural Banks in Ashanti Region

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Abstract:

Information and communication technology has for the last two decades become very popular with major commercial banks in Ghana. Lately, most of the rural banks have also computerized and networked their operations and many more gearing up to be computerized. According to ARB Apex Bank, with the support of Bank of Ghana, they will be embarking on nationwide computerization of all the rural banks in Ghana. This research study aims to examine the relationship between the ICT usage and the financial performance of the rural banks from the perspective of four computerized rural banks, namely; Sekyere; Amansie; Bosomtwe; and Atwima Kwanwoma Rural Bank. Perceptions of the management staff of the rural banks, branch managers, staff members and customers were collected using a survey method. In all 212 people were sampled from the four Rural Banks. Interviews were carried out to collect data from key stakeholders in the computerized rural banks. Three types of questionnaires were prepared and distributed among management and head office staff, branch managers and branch staff. Both semi-structured and 5-point likert scale questionnaire were developed. Data analysis was done using linear regression and Analysis of Variance (ANOVA). The analysis revealed that ICT usage (ICT application, ICT literacy and attitude towards ICT) has a positive linear relationship with the financial performance (deposit mobilization, profit and loan recovery) of the rural banks.

Keywords: ICT, Impact, Rural Banks, Linear regression, and Analysis of Variance.

Introduction:

Virtually all the traditional banks in Ghana are spending huge sums of money in acquisition of IT equipment, networking their various branches and hiring of IT personnel to manage them. These coupled with the huge cost of training staff to use this IT equipment negatively affect the balance sheet of the banks in the short run. These traditional banks acquire a number of ATM machines, Computers and very expensive software, issuing of electronic cards, etc. all at a cost to the banks.

Rural banks in Ghana have recently adopted computerisation of their businesses like these traditional banks. As a result, it has become necessary to find out whether ICT really impact positively on the performance of these rural banks to merit the cost associated with it. Most managers of the various rural banks in Ghana are now thinking of adopting ICT for their daily operations. The question is; what is the impact of ICT on the mobilisation of deposits in the rural banks? Are there any significant relationship between ICT usage and the profitability of the rural banks? Has ICT usage any impact on the credit administration of the rural banks? The main objective of this study is to evaluate the impact of the use of ICT by the rural banks on their financial performance. The specific objectives are; to examine the impact of ICT on mobilization of deposits; to evaluate the impact of computerisation on the recovery of loans; to examine the impact of computerisation on the profitability of the rural banks. The study focuses on the performance of the rural banks as perceived by the staff and management as a
result of the adoption of ICT. The rural banks have been purposely chosen because until early 2004 none of the rural banks in Ashanti Region had been computerized. Maldeni (2009) established a positive relationship between ICT and bank branch performance in the emerging markets. This research seeks to confirm whether this relationship exists in rural banks in the Ashanti of Ghana.

LITERATURE REVIEW

Definition of Information Technology: Information technology (IT) is broadly referred to as computers and a range of peripheral equipment. The most obvious example is perhaps the banking industry, where through the introduction of IT related products in internet banking, electronic payments, security investments, information exchanges, banks now can provide more diverse services to customers with less manpower (Berger, 2003). “Telebanking (telephone banking) can be considered as a form of remote or virtual banking, which is essentially the delivery of branch financial services via telecommunication devices where the bank customers can perform retail banking transactions by dialing a touch-tone telephone or mobile communication unit, which is connected to an automated system of the bank by utilizing Automated Voice Response (AVR) technology” (Balachandher et al, 2001). ICT for banks has brought banking products in the form of personal computer banking, internet banking and electronic funds transfers among others as evidenced in the works of Balachandher et al, (2001), Chorafas (1988) and Essinger (1999).

ICT and Banks’ Performance: In general, existing studies have concluded two positive effects regarding the relationship between IT and banks’ performance; First, IT can reduce banks’ operational costs (the cost advantage). Second, IT can facilitate transactions among customers within the same network (the network effect) (Farrell and Saloner, 1985; Katz and Shapiro, 1985; Economides and Salop, 1992). Indeed, Saloner and Shepard (1995), using data for United States commercial banks for the period 1971-1979, showed that the concern of network effect is important in the ATM adoption of United States commercial banks and this was also espoused by Milne, 2006. Also, there are some studies agreeing with the positive influence of IT spending to business value. Kozak (2005) examines the impact of the progress in IT on the profit and cost efficiencies of the US banking sector during the period of 1992-2003. The research shows a positive correlation between the levels of implemented IT and both profitability and cost savings. A research carried out by Maldeni and Sanath Jayasena (2009) also confirms a positive linear relationship between ICT usage and bank’s performance (deposit mobilisation, loan recovery and profit). Shu and Strassmann (2005) studied 12 banks operating in the US for the period of 1989-1997 and found that although IT has been one of the most marginal productive factors among all inputs, it cannot increase banks’ profits. Some studies echo the so called Solow Paradox in concluding that IT will actually decrease productivity. As stated by Solow (1987), "you can see the computer age everywhere these days, except in the productivity statistics”(Berger, 2003; Tam, 1998). The differences in empirical results may be as a result of the different econometric methodologies used.

Conceptual Framework: A research carried out by Maldeni and Sanath Jayasena (2009) studied the impact of ICT on bank branch performance. They explained that ICT usage at the bank branch involves three elements; ICT application, ICT literacy of staff and customers, and attitude of staff and customers towards ICT. They used Pearson’s correlation coefficient to measure the linear relationship between variables. The analysis revealed that ICT usage has a positive linear relationship with financial performance and quality performance of bank branches. They further developed a conceptual framework for the research investigation and this framework is adopted as follows;
The ICT application is measured as the scope of ICT applications, availability of internet, level of e-mail communication and level of Microsoft office package usage. The attitude towards ICT also involves attitude of branch managers towards ICT usage, attitude of branch staff towards ICT usage, attitude of customers towards ICT usage. Maldeni (2009) also described the ICT literacy level as ICT literacy level of manager, ICT literacy level of branch staff and ICT literacy level of customer.

Data Collection Procedure
A case study research design within Ashanti Region was adopted for the study in order to carry out an in-depth evaluation of the impact of ICT on the performance of rural banks. Notwithstanding its weakness of limited extrapolation, this design was adopted because it is one of the best for obtaining reliable and relevant research results for application to similar organizations. (Saunders et al, 2007) The total population of eight Rural Banks in Ashanti Region was targeted for the study. This is because only eight out of the twenty rural banks in the Ashanti Region have fully computerized and networked and for that matter eligible for this study. A purposive sampling technique was used to select four computerized Rural Banks in four different districts in Ashanti, namely; Sekyere; Amansie; Atwima Kwanwoma; and Bosomtwe Rural Bank. Random sampling was used in selecting the customers who have been with their respective banks for 5 years or more (respondents). Management and staff were also interviewed. In all 212 people were sampled from the four Rural Banks. Interviews were carried out to collect data from key stakeholders in the computerized rural banks. Three types of questionnaires were prepared and distributed among management and head office staff, branch managers and branch staff, and customers. Both semi-structured and 5-point likert scale questionnaire were developed. Data was analyzed with the use of SPSS package. Linear regression analysis was used to show the impact of ICT on the dependent variables; deposit mobilization, loan recovery, profit and service delivery. ANOVA (analysis of variance) was also used because data was categorical and ordinal or nominal (Saunders et al, 2007). The independent variables; ICT application, ICT literacy of staff and customers, and attitude of staff and customers towards ICT were run on deposit, profit, loan recovery, and service delivery to assess the impact each ICT variable has on the dependent variables. The impact of ICT on the total performance of the rural banks was also analysed.

Data Analysis, Results and Discussions
Impact of ICT Usage on the Deposit Mobilisation of Rural Banks
This section describes how the use of ICT by the Rural Banks affects their key performance indicators. The key performance indicators are deposit mobilization, profitability, loan advances and service delivery. Table 1 in appendix A describes how ICT usage by the Rural Banks affects their deposit mobilization. Staff of selected Rural Banks rank impact of ICT on deposit mobilization as follows; ICT application (56.5%), ICT literacy (2.7%) and attitude towards ICT (38.5%), where the application of ICT and attitude towards ICT are statistically significant in explaining the variations in deposit mobilization of the Rural Banks. It can be observed from the table that a 1% change in the application of ICT will cause 0.565% change in the deposit mobilization of the Rural Banks. It can further be observed that ICT literacy has the least impact on deposit mobilization and ICT application has the highest (56.5%) impact on deposit mobilization. Therefore if authorities of the bank want to increase deposit then they should concentrate more on the application of ICT.
Impact of ICT Usage on the Deposit Mobilization of the Rural Banks

Table 1: ICT usage on deposit mobilization

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>I (Constant)</td>
<td>.085</td>
<td>.083</td>
<td>1.025</td>
<td>.307</td>
</tr>
<tr>
<td>Do you agree ICT application has an impact on deposit mobilization in this Bank?</td>
<td>.565</td>
<td>.037</td>
<td>.575</td>
<td>15.234</td>
</tr>
<tr>
<td>Do you agree ICT literacy has an impact on deposit mobilization in this Bank?</td>
<td>.027</td>
<td>.021</td>
<td>.027</td>
<td>1.291</td>
</tr>
<tr>
<td>Do you agree attitude towards ICT has an impact on deposit mobilization in this Bank?</td>
<td>.385</td>
<td>.036</td>
<td>.412</td>
<td>10.693</td>
</tr>
</tbody>
</table>

Source: Author’s field Study

The ANOVA table above shows that the model is statistically significant. This means that the model is good fit in explaining the variation of deposit mobilization by the Rural Banks. The use of ICT therefore is a critical success factor in the mobilization of deposit for the Rural Banks.

Impact of ICT Usage on Profit of the Rural Banks

Table 2 in appendix A also shows how the use ICT by the Rural Banks affects their profitability. A ranking of ICT application, ICT literacy, and attitude towards ICT puts ICT application as the most important of all. That is to say a 100% change in ICT application will cause a 39.1% change in the

Model Summary 1

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.964a</td>
<td>.929</td>
<td>.928</td>
<td>.14237</td>
</tr>
</tbody>
</table>

The model summary indicates that the model explains the variations in the deposit mobilization of the Rural Banks by 92.9%. That is ICT application, ICT literacy and attitude towards ICT all together explains the variations in deposit mobilization by 92.9% all other things held constant.
profits of the Rural Banks. Next to ICT application is ICT literacy (30.4%) followed by the attitude towards ICT (28.1%) and they are all statistically significant in explaining the variations in the profits of the Rural Banks. It can further be observed that though ICT application is the most important factor in explaining variations in the profit, the ICT literacy and attitude towards ICT are equally important with 30.4% and 28.1% respectively. This can be attributed to the fact that acquisition of ICT itself is a cost and for that matter to be able to generate enough income to offset the cost will require efficiency in the use of the ICT. Therefore management should equally pay attention to the ICT literacy and attitude of their staff towards the ICT.

**Impact of ICT Usage on Profit of the Rural Banks**

<table>
<thead>
<tr>
<th>Table 2: ICT Usage on Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>Do you agree ICT application has an impact on profit in this Bank?</td>
</tr>
<tr>
<td>Do you agree ICT literacy has an impact on profit in this Bank?</td>
</tr>
<tr>
<td>Do you agree attitude towards ICT has an impact on profit in this Bank?</td>
</tr>
</tbody>
</table>

a. Dependent Variable: The increase in our profits can be attributed to a larger extent to the introduction of ICT by our bank.

**Source: Author’s field Study**

**ANOVA 2**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>72.447</td>
<td>3</td>
<td>24.149</td>
<td>1.069E3</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>4.428</td>
<td>196</td>
<td>.023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>76.875</td>
<td>199</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

b. Dependent Variable: The increase in our profits can be attributed to a larger extent the introduction of ICT by our bank.

**Source: Author’s field Study**

The ANOVA table above indicates that the model is statistically significant. This means that the model is good fit in explaining the variations in the profitability of the Rural Banks.

**Model Summary 2**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.971^a</td>
<td>.942</td>
<td>.942</td>
<td>.15031</td>
</tr>
</tbody>
</table>

**Source: Author’s field Study**
The model summary also shows that all the independent variables (ICT application, ICT Literacy and attitude towards ICT) all together explain the variations in the profitability of the Rural Banks by 94.2%, all other things held constant. Thus managements of Rural Banks are encouraged to invest in ICT if they want to increase profitability.

Impact of ICT Usage on Loan Recovery of the Rural Banks

Table 4 in Appendix A describes how the use of ICT by the Rural Banks affects the monitoring and recovering of loans. A ranking of the major components of ICT usage puts the attitude towards ICT (44.3%) as the highest in terms of impact on loan recovery. Thus a 100% change in attitude towards ICT will cause a 44.3% change in the recovery of loans. This is followed by ICT literacy (27.9%) and ICT application (23.9%) and they are all statistically significant. The fact that attitude towards ICT was ranked by the staff as the most important may be attributed to the fact, to be able to monitor and recover loans requires much attention and dedication. According to the Credit Manager at Atwima Kwanwoma Rural Bank, he has to monitor loans which are due from his computer every day in order to follow up on them. Thus to be successful in that regard will mean you have to develop a positive attitude towards the use of ICT.

Impact of ICT Usage on Loan Recovery of the Rural Banks

Table 4: ICT Usage on Loan Recovery

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.145</td>
<td>.057</td>
<td>2.539</td>
</tr>
<tr>
<td></td>
<td>Do you agree ICT application has an impact on loan recovery of this Bank?</td>
<td>.239</td>
<td>.079</td>
<td>.245</td>
</tr>
<tr>
<td></td>
<td>Do you agree attitude towards ICT has an impact on loan recovery of this Bank?</td>
<td>.443</td>
<td>.059</td>
<td>.460</td>
</tr>
<tr>
<td></td>
<td>Do you agree ICT literacy has an impact on loan recovery of this Bank?</td>
<td>.279</td>
<td>.065</td>
<td>.283</td>
</tr>
</tbody>
</table>

a. Dependent Variable: We are able to recover our loans effectively with ICT than when there was no ICT (i.e. incidents of bad loans have reduced with the introduction of ICT).

Source: Author’s field Study

ANOVA 4

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>69.780</td>
<td>3</td>
<td>23.260</td>
<td>1.169E3</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3.900</td>
<td>196</td>
<td>.020</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>73.680</td>
<td>199</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s field Study

The ANOVA table above shows that the model is statistically significant. This means that the model is good fit in explaining the variation in recovery of loans by the Rural Banks. Thus the use ICT is a critical success factor in the recovery of loans for the Rural Banks.
Model Summary 4

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.973(^a)</td>
<td>.947</td>
<td>.946</td>
<td>.14106</td>
</tr>
</tbody>
</table>

**Source: Author’s field Study**

The model summary shows that all the independent variables (ICT application, ICT Literacy and attitude towards ICT) all together explain the variations in the recovery of loans by the Rural Banks by 94.7% other things held constant. Thus managements of Rural Banks are encouraged to invest in ICT if they want to increase the recovery of loans.

**Conclusion:**

Generally there is a significant positive impact of the use ICT by the Rural Banks on their performance which confirms Maldeni and Jayasena (2009) findings. A further breakdown of the performance (deposit mobilization, profit and loan recovery) in relation to ICT usage (ICT application, Attitude towards ICT and ICT Literacy) revealed the following: There is a significant impact of ICT application and attitude towards ICT on deposit mobilization. This means that the rural banks can increase deposits by increasing ICT application and also a positive attitude by bank staff and customers towards ICT usage will bring increase in deposits. This is statistically proven using regression analysis and it is consistent with the work of Maldeni and Jayasena (2009). The impact of the third independent variable (ICT literacy level of staff and customers) on deposit mobilization is not statistically significant which is also consistent with Maldeni and Jayasena (2009). All three independent variables listed as ICT application, attitude towards ICT and ICT literacy all have significant impact on the dependent variable profit (Maldeni and Jayasena, 2009). The impact of the ICT application and Literacy on profit is stronger and it’s statistically significant. This is consistent with the works of Kozak (2005) and Maldeni and Jayasena (2009). Finally, there is a significant positive relationship between the ICT usage and loan recovery as espoused by Maldeni and Jayasena (2009). All the three independent variables have an impact on the loan portfolio of the rural banks and they are all statistically significant. Attitude of staff and customers towards ICT has the strongest impact, followed by ICT literacy of staff and customers. Rural bank credit officers now have easy access to enough information on customers and with a click of the mouse can appraise a customer for loan approvals. Time lapse for loan approvals have improved significantly. Monitoring and recovering of loans are also done easily, thus reducing the incidents of bad loans substantially. All these are as a result of the use ICT the by bank. In conclusion, the findings of the paper established a positive impact on deposit mobilisation, loans recovery and profitability of rural banks in Ashanti Region which were in line with the objectives of this paper.

**REFERENCES**


