# Review of: "Innovative Financial Services and Commercial Banks' Profitability in Africa"

Zombor Berezvai[1]

1 Corvinus University of Budapest

Potential competing interests: No potential competing interests to declare.

The manuscript examines how innovative financial services (namely: ATM, online and mobile banking) impact the financial performance of African banks. The research question is an interesting one, however, the manuscript has several limitations that need to be addressed. The results are not conclusive and acceptable in the current version.

General comments:

1. ATM is not an innovative banking service in the 21st century. More discussion is needed about why the authors believe this is innovative in Africa.
2. The structure of the manuscript needs to be improved.
    1. Hypothesis development should be after the introduction of the relevant theories and the developed hypotheses should be connected to the theories introduced. In the current version, the introduction of the theories in subsection 2.3 are completely needless, these are not used in the manuscript.
    2. The descriptive statistics of the variables used should be in the Data section (subsection 3.3), not among the results.
    3. Checking all the regression assumptions are not necessary, and these have to be part of the results, not the methods. I advise you to present the results of the regression first and check the residuals afterwards. It is strange talking about regression residuals without seeing the regression itself.
    4. The discussion should be after introducing all the results, including the qualitative ones.
3. Lack of references in several parts of the manuscript, especially in the hypothesis development part (e.g., subsection 2.5 does not contain any references). Furthermore, the conceptual model is too basic (e.g., consumer satisfaction is not included, it does not fit well to the reviewed literature).
4. Almost all the sections and subsections start with an introduction that feels like reading an introductory textbook. These are not needed in an academic paper and should be eliminated completely. Subsections 3.1, 3.2, 3.4 and a large part of 3.3 are completely unnecessary. There is no need to detail how correlation is calculated, it is a well-known method among researchers (subsection 4.2).
5. This is not clear what is the source of the data (from where the authors downloaded the audited financial statements) and how the different variables were constructed. What is the source of the revenue generated by the ATM service? Is the methodology applied by the different banks for allocating revenue the same? Table 5 is not sufficient in this regard,

additionally, there is an error in Table 5, column 'Scale of Measurement'. For MBS and OBS, the scale shouldn't be the same as for ATMs. Therefore, it is still unclear how MBS and OBS were measured.

6. The authors talk a lot about OLS assumptions, but do not say a word about the most important and relevant assumption, exogeneity that is most likely not satisfied. This should be discussed.
7. The results are misinterpreted.

    1. Subsection 4.1 is not correct in its current form. For e.g., "The mean value of return on assets was 0.62, implying that, on average, banks in Africa earned 62 cents" (p. 13) – This is incorrect, it shows that African banks on average earned 62 cents for every dollar of assets. This addition is making a large difference. The same mistake in the interpretation is there for all the other variables.
    2. "It [unobserved heterogeneity] is captured by including a random error term in the model, allowing for variation in the intercepts and slopes across individuals." (p. 14) – This is incorrect, the slopes (estimated parameters) are the same for all individuals in a random effect model.
    3. 3. While the authors conclude based on the Hausman test that the random effect model is the preferred one, they run the fixed effect model (Table 9: "Method: (Cross-section fixed effects)"). This is the reason behind the very high R2 (95%). It is not true that this R2 is only due to ATM, MBS and OBS, it is also largely determined by the 17 bank fixed effects.
    4. The interpretations of the estimated parameters on the top of page 16 are incorrect. Since ROA is not in a log form, the correct interpretations are the followings: This implies that a 1% increase in ATM service, mobile service, and internet banking services is expected to result in a 0.64%-points, 0.14%-points, and 0.27%-points increase in the profitability of commercial banks operating in Africa, all else being equal. (If ROA is measured in %.)

8. The discussion part (Section 5) is very weak, it is basically repeating the findings only without any further (real) discussion.
9. Cost-effectiveness (Section 6): do you have any data about closing branches? If not being able to close a branch (or at least significantly reduce the opening hours), then these savings won't be realized.

Some minor problems:

1. Hypotheses: it would be better to indicate the direction of the relationships, too (i.e., positive or negative)
2. "teachers' job satisfaction is the dependent variable" (p. 7.) – this must be a typo, should be corrected.
3. It is unclear what Table 2 shows. Which variable(s) were tested for serial correlation?
4. The normality of the residuals is not the most important assumption of OLS. It can be tested, but it would be more important to talk about exogeneity and homoscedasticity.
5. The title of Table 4 indicates that the heteroscedasticity test was calculated for ROA. However, it should have been done for the error term of the regression.
6. Table 3 shows correlation coefficients among the explanatory variables. Table 7 shows (or should show) the same according to my opinion, however, there are very large differences among the two tables. This needs to be reconciled.
7. The model result at the bottom of page 15 should also contain the error term.