# Review of: "Factors Influencing Smallholder Farmers' Preference for Veterinary Services Providers in Zimbabwe"

Stephen Frimpong[1]

1 University of Missouri - Columbia

Potential competing interests: No potential competing interests to declare.

The authors studied "Factors Influencing Smallholder Farmers' Preference for Veterinary Services Providers in Zimbabwe."

The authors portray an initial impression that "access to veterinary services is not a problem in the study area"; rather animal diseases are the challenge---At least from sentence 1 of the abstract, and paragraphs 1 and 2 of the introduction section. There are also major and minor questions that ought to be addressed to improve the paper.

1. Data collection:-(i) Is there is justification for the east-west stratification? (ii) How did you do the systematic random sampling? (iii) Did you speak to more than one respondent per household? Especially since there can be more than one 18+years old in a household. In other words, who were the main subject of this study? (iv) Since you selected 18+years old respondents, did your sample included "non-livestock owners with no livestock management experiences", "non-livestock owners with livestock management experiences", and ""livestock owners with livestock management experiences"? How will these differences shape your results because knowledge of household information is not the same as knowledge of farming or management system? (v) Did you do 4 or 8 focus group discussions? —there seems to be a discrepancy in the methods vs results section.
2. Analysis: (i) You stated that some locations had only DVS services available, which means those locations had no basket of choices. In other words, there is certainty in the choice of GVS in those locations. I suggest that you separately analyze data from such different quasi-experiments: -- A quasi-experiment with a single treatment vs another with multiple treatments. Analyzing jointly enshrines treatment bias. Then again, the question will be what are the alternatives in those areas to warrant a dichotomous or polychotomous response? Does your data include respondents who did not use any of the services studied? (ii) Were the farmers able to identify and rate the animal diseases? (iii)How did you measure and use your variables in the analysis? For instance, you stated that "satisfaction" is a likert-type variable, yet it seems that you used the variable as a continuous covariate in the model. Also distinguish "livestock" from "poultry." (iv)Did you test for possible endogeneity, heteroscedascity, multicollinearity or selection biases?
3. Model Convergence and Choice:

(a)Model convergence: (i)Sample distribution: Your total sample size =382 respondents; government veterinary services (86.7% of the respondents) =332 respondents; CAHWs were reported to have provided preventive veterinary services to 13.9% of the respondents=50 respondent; Private (1%) =1 respondent. Since private is just 1 respondent, expect that the

model will not converge. (ii)Research focus: You stated that there are 4 aspects of veterinary services—curative, preventive, vaccines/drugs, and extension. You cannot lump data from all these variants and analyze together, because a curative service provider is not in demand or market competition with vaccine or drug supplier. Yes, they are in the same value chain, but they seem to operate in different target markets based on your explanation.

(b)Model Choice: Multivariate (MV) vs multinomial(Mn) models:---MV is an equivalent of seemingly unrelated regression in continuous models. The MVs generally assume that “respondent (consumer) forms a basket of multiple choices (yn) from an array of choices (YN), where y<=Y.” There is an equation (y1n) for each choice made by a single respondent, so that a single respondent has yn equations. We estimate the MV because the error terms of the different equation (y1n---yn) may correlate. In your case, it is not that the individual respondents consume multiples of the alternatives. In this case, the alternatives compete in terms of their inclusion in the consumption basket (The choice of an alternative reduces the probability of choice of the remaining alternatives). I believe an Mn model may be best suitable once it meets the Hausman’s assumption test.

(4) Objective #2 not addressed: Your analytical methods did not address your second objective. The model coefficients alone cannot  assess the relative importance of the variables. For instance, a coefficient of 0.5 may not be statistically different from 0.3.