

# Review of: "Assessing students' attitudes and perceptions towards statistical literacy in a university system in a developing African country"

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Potential competing interests: No potential competing interests to declare.

In the abstract, it is stated that 'It entails a diametric paradigm repositioning' - what is meant by this phrase?

Please add nouns after this and it throughout the text so that the reader understands what this and it refer to.

Future research needs to explore statistics curriculum development, which is lagging and may be silently responsible for the low development rate in poor African countries. Please be careful in making blanket statements like these. Surely, statistics curricula are not responsible for the low development rate in poor African countries. Instead, statistics curriculum development can be attributed to low academic performance and perhaps correlates with other mathematical sciences in other degree programs/curricula that are heavily reliant on STEM subjects, with implications then for professionals in these career paths. But it cannot be stated uncategorically that it is responsible for low development in poor African countries.

Please be careful with reference to 'influence', since it denotes causality that cannot be proved with the current research methods.

In the introduction, it is stated that 'Regardless, the persistent high failure rates in the discipline indicate that these strategies have not succeeded within Zimbabwe,...' What are the strategies that are referred to here?

In the methods section, a description of the study design could greatly enhance the manuscript. For example, what kind of mixed-method design was employed for purposes of the current study? The methods section could perhaps also be improved by providing more information about the aspects measured by the Survey of Attitudes towards Statistics (SATS) instrument (as are described in section 3.2.1 onwards – information like this, a little earlier in the text would be helpful). Where does this questionnaire come from, for whom was it standardized, and is the work of Schau (2003) and Vanhoof (2010) used as a conceptual framework for the current study?

How was a Cronbach Alpha cutoff of 0.70 decided? Please correct ranges where age overlaps (The age ranges (in years) of the students were 17-21 (n=41; 22%), 21-25 (n=117; 63%). What does it mean when it is stated that 'There were significant differences (Chi-test,  $p < 0.05$ ) in the age ranges of the respondents.' It is further stated that 'The level of formal education reached by the respondents indicated that a majority (n=40; 22%) were in level two in the first semester or 2.1, with 19% (n=35) in level 1.2. At least 17% (n=33) of the students were in level 2.2, ...' What do these levels mean?

Someone not familiar with the Zimbabwean system needs clarification on this issue, please.

In Table 1, why is there an = after statistics? What are the Standard Errors associated with each of the percentages? What is meant by qualitative aspects of statistics courses? Please review the following statement: 'The coefficient model summary indicated that as stress increases and enjoyment of qualitative methods decreases, there is a likelihood of a student enjoying statistics.' As it currently stands, the statement seems to be counterintuitive - as stress increases and enjoyment of qualitative methods decreases, surely there must be a likelihood for a decrease in enjoying statistics?

Sections 3.4.1 and 3.4.2 state that 'Five prominent themes were identified in the responses,...'. Which responses are referred to here, from whom, and from which data collection instruments? Please clarify.

In section 3.4.2, please refer to patterns, not trends, since there are no trend data to report on.

In section 3.5, it is stated that 'Students at CUT are highly motivated, interested, and willing to put effort into statistics modules.' This statement should be nuanced much more, given the emphasis in the next section that seems to focus on the anxiety and stress that statistics bring to students. A balanced description is needed here: students seem to be motivated to learn statistics, despite the experiences of anxiety and stress it brings about.