Review of: "The Comparison of Traverses Adjusted by Non-Rigorous and Rigorous Methods of Adjustment"

Saeed Farzaneh[1]

1 University of Tehran

Potential competing interests: No potential competing interests to declare.

The article presents a study comparing traverse adjustment methods - non-rigorous (Bowditch and Transit rules) versus rigorous (least squares adjustment) - for a closed loop traverse of 12 stations at the Federal University of Technology Owerri in Nigeria.

The main concerns are:

- The sample size is small - only one closed traverse loop of 12 stations is used. More traverses in different areas could strengthen the analysis.

- There is no mention of checking for gross errors in the observed data before adjustment. This should be done to avoid skewed results.

- Only one type of instrument (total station) was used for the measurements. Using multiple instruments could reveal any instrument-specific biases.

- The terrain and environmental conditions of the survey area are not described. These can affect measurements and should be reported.

- No information is provided on how the control points FUTO001 and FUTO003 were established and their accuracy. Poor control can affect the traverse.

- The distribution of traverse stations is not disclosed. Uneven distribution could potentially bias certain adjustment methods over others.

- There is no quantification of the precision of the total station measurements. This would help determine expected accuracy of adjusted coordinates.

- No redundant measurements were taken to determine empirical instrument precision and allow error detection. This is standard practice.

- The least squares adjustment is treated as truth without proper statistical testing of coordinate uncertainties.

- No evaluation is done of the theoretical versus empirical precision of the adjustments. This could reveal flaws.

- Conclusions are definitive regarding Transit vs. Bowditch despite limitations and small sample size. More qualified language would be appropriate.

In summary, the small sample size, lack of redundancy, and unknown measurement precision along with other factors like terrain, control, instrumentation, and statistical testing make the conclusions less robust. More rigorous experiment design, data validation, and statistical testing could help produce more definitive recommendations.