

REVIEWER'S REPORT

Manuscript No.: IJAR- 55095

Title: Contribution to Modeling and improving quality control of finished products in production systems by using Bayesian Networks and Lean Six Sigma.

Recommendation:

- Accept as it is
- Accept after minor revision ✓**
- Accept after major revision.....
- Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity		✓		
Significance		✓		

Reviewer Name: Dr. Umeshkumar Hiralal Chavan

Detailed Reviewer's Report:

1. Overall Evaluation

The manuscript presents a combined methodology integrating Lean Six Sigma (LSS), Bayesian Networks (BNs), and Multiple Regression Analysis to diagnose, model, and improve quality control processes in industrial production systems.

A practical implementation is carried out on a pocket-tissue production line (RN-04) at the SITRACEL industrial company in Cameroon.

The approach identifies major sources of non-quality, quantifies process performance, models cause-effect relationships using Bayesian networks, and develops predictive models for scrap and waste rates.

2. Strengths of the Manuscript

a. Strong methodological integration

The combination of Lean Six Sigma, Bayesian Networks, and regression analysis is well-structured and provides a comprehensive diagnostic and predictive framework.

b. Practical implementation

Using real industrial data from SITRACEL strengthens the applicability and relevance of the research.

c. Clear stepwise methodology

The six-step approach (identify → analyze → model → improve → monitor) is logically coherent and usable by practitioners.

d. Use of statistical validation

F-tests, t-tests, PCA, and multicollinearity handling increase the technical credibility of the regression models.

e. Valuable contribution for industries in developing regions

The paper addresses a real gap in quality management adoption within Sub-Saharan African industries.

3. Minor Revisions Required

a. Language, grammar, and formatting

There are numerous grammatical errors, long sentences, inconsistent capitalization, and formatting issues (e.g., "diagram", "giagram", spacing, tables).

Recommendation: Language editing and proofreading are necessary.

b. 2. Literature review could be expanded

Some references are outdated. Strengthen with recent works (2021–2024) on Bayesian networks in manufacturing and LSS in developing countries.

c. 3. Clarify data descriptions

Tables 3 and 4 contain inconsistencies in formatting and clarity. The manuscript should clearly explain:

- Units of measure
- Frequency of data collection

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- How certain probabilities were derived

4. Figures and diagrams

Some figures (e.g., Figures 3, 4, 14–17) appear low resolution or poorly aligned.

Improve resolution and positioning for better readability.

5. Improve explanation of Bayesian network logic

While the networks are presented, conditional probability tables (CPTs) are not shown. A brief explanation of how probabilities were computed will enhance understanding.

6. Clarify regression figures and equations

Some regression equations include notation inconsistencies (e.g., formatting of \sqrt{Y} , missing parentheses, superscripts).

Ensure mathematical notation is uniformly formatted.

7. Conclusion should reflect limitations

Add:

- Data limitations
- Model assumptions
- Challenges in industrial data collection

5. Final Recommendation

The manuscript demonstrates strong potential and provides a valuable contribution, but requires improvements in language quality, formatting, and certain methodological clarifications.

Recommendation: Accept with minor revisions