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REVIEWER'S REPORT

Manuscript No.: IJAR-55023

Title: Coût de production du litre de lait cru en ferme laitière dans le bassin laitier de Niamey 1 - Production cost of a liter of rawmilk on a dairyfarm in Niamey'sdairy basin**.**

Recommendation:
Accept as it is

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

Reviewer Name: Dr. Manju M **Date: 01-12-2025**

Detailed Reviewer's Report

1. Context and Rationale

- Improving local milk competitiveness in the Niamey basin requires understanding farm-level production costs.
- Economic assessment guides investments, optimizes practices, and informs value-chain stakeholders.

2. Overall Objective

- Determine the cost of producing one liter of raw milk in dairy farms based on structural characteristics, investments, and herd-management practices.

3. Specific Objectives

- Classify dairy farms by technical and organizational traits.
- Assess cost components of milk production.
- Compare cost variations among farm types.
- Identify profiles with lowest and highest production costs.

4. Study Area and Geographic Coverage

- Conducted in Niamey and four peri-urban communes (Bitinkodji, Karma, Kollo, Namaro), a peri-urban dairy basin with mixed livestock farming.

5. Dairy Farm Census

- Out of 33 farms identified, 10 had lactating cows during verification and formed the study sample.

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6. Sampling Strategy

- Purposive selection of 10 farms representing diverse production systems, sizes, and management practices.

7. Data Collection Approach

- Digital KoboODK survey and interviews with farm owners and resource persons.
- Collected data on:
  - Land area
  - Infrastructure and equipment
  - Herd characteristics (size, breeds, reproduction)
  - Labor organization
  - Feeding strategies
  - Mobility and grazing
  - Milk production levels

8. Analytical Methodology

- Two-step statistical analysis:
  1. Principal Component Analysis (PCA) to reduce dimensionality.
  2. Hierarchical Cluster Analysis (HCA) to classify farms into homogeneous groups.

9. Farm Typology Criteria

- Based on:
  - Level of crop–livestock integration
  - Intensification (selection, genetics, inputs)
  - Market orientation (≥50% milk sold vs. other products)

10. Identification of Farm Types

- Three distinct types identified based on:
  - Land size
  - Labor force
  - Infrastructure intensity
  - Herd size and breed composition
  - Reproductive management
  - Mobility
  - Crop–livestock integration

11. Farm Type I Characteristics

- Large land and herd

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- Many workers
- High infrastructure investment
- Sedentary system with improved breeds
- Significant fodder production
- Result: Highest cost – 525 FCFA/L

12. Farm Type II Characteristics

- Medium investment
- Moderate infrastructure
- Mixed breeds
- Partial herd mobility
- Some crop activity and limited fodder
- Result: Intermediate cost – 293 FCFA/L

13. Farm Type III Characteristics

- Low infrastructure investment
- Local breeds
- Mixed sedentary and mobile grazing
- Reduced labor and input use
- Minimal crop–livestock integration
- Result: Lowest cost – 257 FCFA/L

14. Production Performance

- Average daily milk production:
  - Type I: 23 L/day
  - Type II: 32 L/day (highest efficiency)
  - Type III: 12.5 L/day

15. Cost Components

- Feed: 66–74% of total cost
- Labor: 5–25%
- Infrastructure & equipment: 7–11%
- Health: ~2%
- Artificial insemination: 0–11%

16. Average Production Cost

- Overall mean cost: 359 FCFA/L
- Indicates non-profitability under current conditions.

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17. Economic Interpretation

- Type I: Highest cost due to heavy investment and low productivity.
- Type II: Balanced cost and productivity, good compromise.
- Type III: Low-cost model using local resources efficiently.

18. Competitiveness Issue

- Local milk cost exceeds market price (250–350 FCFA/L), reducing profitability and competitiveness versus imported milk.

19. Key Implications

- Type III demonstrates that low investment, local breeds, mixed management, and natural resources reduce costs.
- Guides policymakers, development partners, and farmers to improve economic viability.

20. Major Applications

- Classifying farms for targeted technical advice
- Identifying key cost components
- Informing policy and investment decisions
- Supporting farmers in productivity improvement

21. Main Limitations

- Small sample (10 farms) limits representativeness
- Calculation excludes by-products, possibly overestimating costs
- Single-period data collection ignores seasonal variations

22. Recommendations

- Promote balanced, diversified rations
- Encourage local fodder production
- Implement herd management best practices
- Develop AI use with technical support
- Provide subsidies, credit access, and infrastructure support
- Conduct training and ongoing advisory systems for cost optimization