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REVIEWER'S REPORT

Manuscript No.: IJAR-59649

Title: Digitalizing the Spoken Word AI and Big Data Frameworks for Preserving Oral Traditions in Rural Development.

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's ID: JPR- **098**

Detailed Reviewer's Report

Decision: Accept after Major Revision

Major Revisions

1. Clarification of Research Contribution: The authors should clearly identify the novel contributions of the proposed framework compared with existing AI-based language documentation, digital heritage preservation, and indigenous knowledge management approaches.

2. Methodological Details: The methodology is primarily qualitative and design-oriented. The authors should provide more details about the literature selection process, inclusion/exclusion criteria, data sources, and procedures used to develop and appraise the proposed framework.

3. Experimental Validation: The findings claim improved transcription accuracy and reduced archival processing time. However, no actual numerical results, experimental comparisons, or quantitative evaluation tables are presented. The authors should provide measurable evidence to support these claims.

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4. AI Model Selection and Configuration: The AI processing layer discusses ASR, NLP, deep learning, translation, and semantic annotation. The authors should specify suitable model architectures, training configurations, fine-tuning strategies, and model selection criteria for low-resource languages.

5. Low-Resource Language Challenges: The manuscript should provide a deeper discussion of challenges such as limited labelled datasets, dialect variations, code-switching, pronunciation differences, and language-specific grammatical structures, together with possible mitigation strategies.

6. Big Data Architecture Implementation: The proposed cloud-based architecture is conceptually described, but implementation details are limited. The authors should explain the selection and integration of storage systems, distributed processing frameworks, metadata catalogues, vector databases, and knowledge graphs.

7. Data Privacy and Security: Although community data sovereignty is discussed, the technical mechanisms for protecting sensitive cultural information require further explanation. The authors should address encryption, authentication, authorization, secure data sharing, backup, and access-control mechanisms.

8. Community Participation and Ethical Validation: The proposed framework emphasizes community governance, consent, and ownership. However, the practical involvement of community members, elders, cultural custodians, and local institutions in the validation process is not sufficiently demonstrated. The authors should clarify how community approval and withdrawal rights would be implemented.

9. Evaluation Metrics and Comparative Analysis: The authors introduce WER, CER, Cohen's kappa, efficiency, and community validation indicators. However, the manuscript does not provide actual evaluation results. A comparative evaluation of manual transcription, general-purpose ASR, and community-adapted AI-assisted transcription would strengthen the study.

10. Practical Application and Scalability: The authors should demonstrate how the proposed framework can be applied in a real rural development environment. Further discussion is needed regarding infrastructure costs,

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internet connectivity, computational requirements, long-term maintenance, scalability, and transferability to different geographical and linguistic communities.

Minor Revisions

1. Abstract Improvement: The abstract should more clearly distinguish the proposed framework, research methodology, key findings, and major contributions. Quantitative claims should be supported by actual evaluation results or appropriately qualified.

2. Research Questions: The four research questions are relevant, but the authors should explicitly connect each research question with the corresponding methodology, findings, and conclusions.

3. Literature Review: The literature review is extensive, but the authors should improve the synthesis by comparing existing approaches and identifying their limitations rather than primarily describing individual studies.

4. Figure Quality: Figure 1 should be improved for readability. The authors should ensure that all architectural components, data flows, and interactions between technical layers and governance mechanisms are clearly labelled.

5. Table Presentation: Tables 1 and 3 should be formatted consistently, with clearer descriptions of evaluation indicators, development applications, and governance conditions.

6. Terminology Consistency: Technical terms such as AI, ASR, NLP, WER, CER, FAIR, CARE, and data sovereignty should be defined at their first occurrence and used consistently throughout the manuscript.

7. Section Numbering: The manuscript jumps from Section 6 (Discussion) to Section 9 (Conclusion). The authors should correct the section numbering and ensure a consistent structure.

8. Language and Grammar: Several sentences are lengthy and contain punctuation and grammatical inconsistencies. The manuscript requires careful proofreading and academic language editing.

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9. Reference Formatting: The reference list should be checked for consistency in author names, publication titles, journal details, page numbers, and DOI formatting. The authors should also verify that all cited works appear in the reference list and vice versa.

10. Conclusion Enhancement: The conclusion should more clearly summarize the principal research contributions, methodological limitations, practical implications, and specific directions for future research.