

Data literacy: an output focused model to guide Kenyan academic libraries



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Introduction

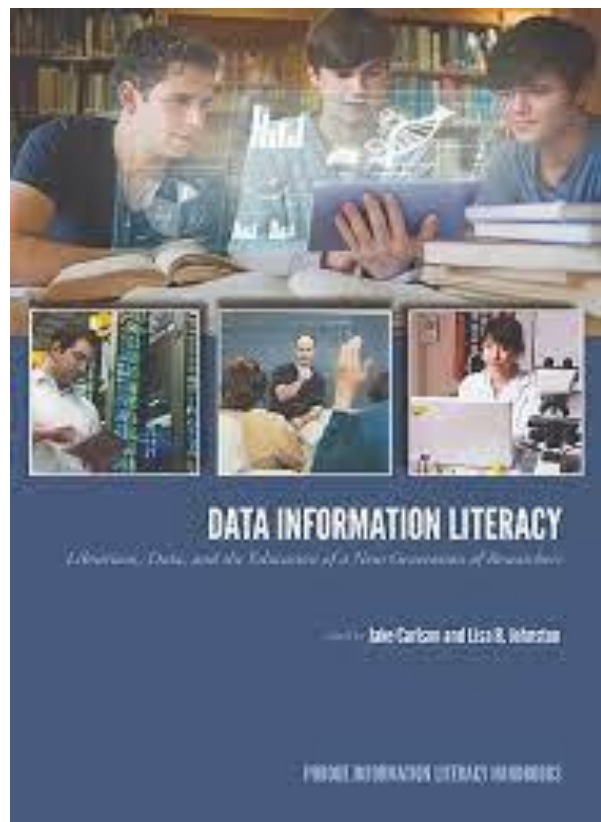


- Era of rapid data generation.
- Researchers are increasingly overwhelmed by the volume and complexity of data.
- This makes effective data management a significant challenge.
- This struggle impedes their ability to efficiently navigate, interpret, and utilize data for high-quality research and innovation.
- Despite the ubiquity of data, effective data management remains a critical issue, impacting the quality and innovation of research.

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Literature context

Definition:
Data literacy is the ability to understand, interpret, and use data effectively.



Problem statement

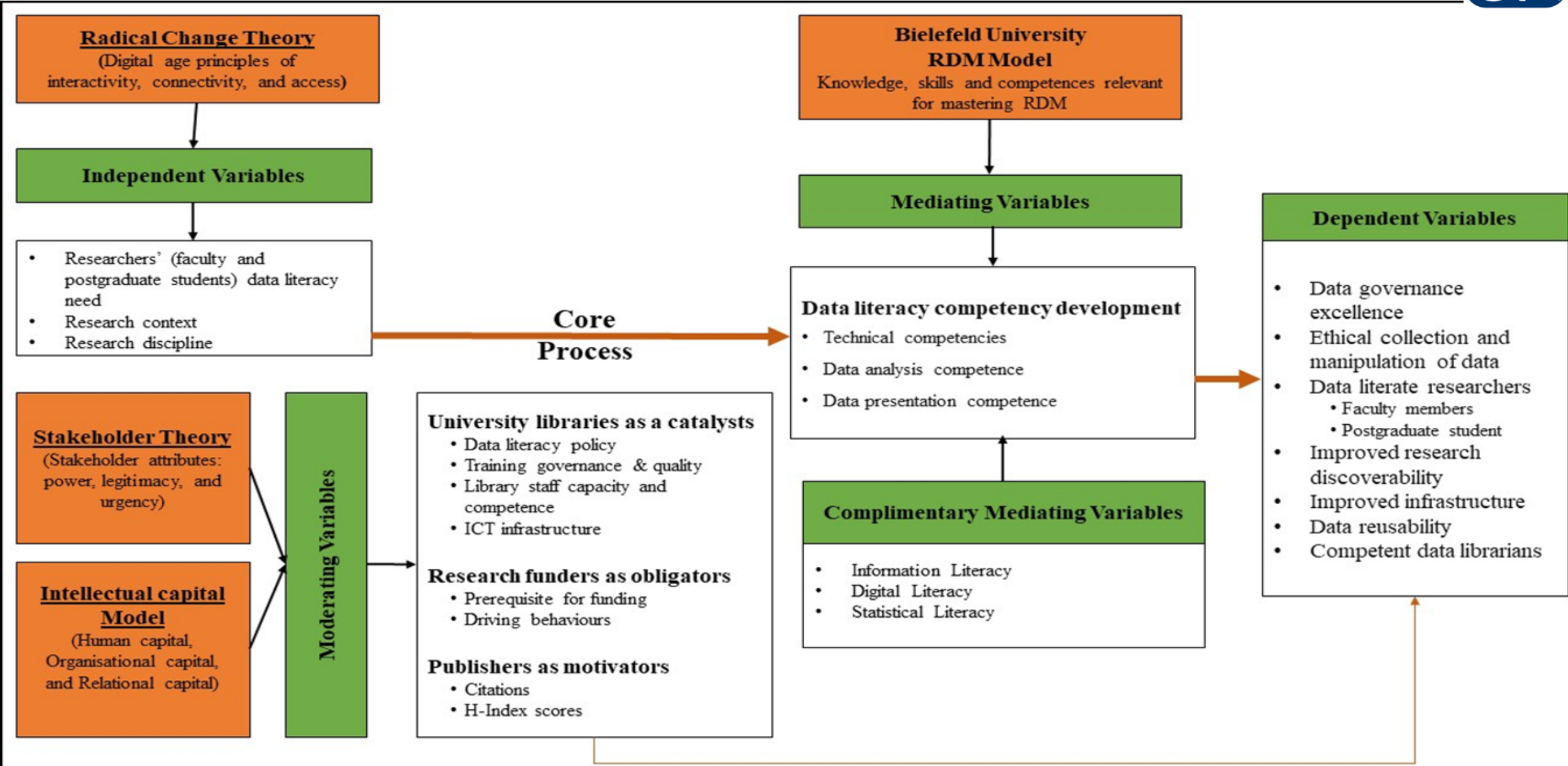


- Increasing importance of data literacy skills in the 21st century due to reliance on data-driven decision-making.
- Researchers' critical role in collecting, analyzing, and disseminating data for societal advancement.
- Lack of standardized data literacy training and framework affecting research quality and credibility.
- Debate on libraries' role in data curation and literacy services, urged by ACRL.
- Gaps in policy and practice hinder the efficient implementation of data literacy programs.
- Some academic institutions lack data governance policies or have rigid adaptability.
- The absence of a standardized framework hampers private university libraries in addressing demand.
- Misalignments in policy, human resourcing, and infrastructure exacerbate challenges, emphasizing the need for comprehensive intervention.

Objectives

1. Critically review the existing literature on data literacy, in order to establish a comprehensive framework encompassing essential services and components that would facilitate the successful implementation of a data literacy initiative in selected private universities in Kenya
2. Asses the data literacy needs of faculty and postgraduate students in selected private universities in Kenya.
3. Asses the organizational infrastructure of selected private university libraries in Kenya to determine the feasibility of offering data literacy services.
4. Assess the technical infrastructure readiness in the selected private university libraries in Kenya to facilitate the implementation of data literacy training.

Initial framework



Methodology

Research Paradigm, Approach, and Design

- **Research Paradigm:** Pragmatic paradigm chosen for its practical advantages
- **Research Approach:** A mixed methods approach selected for a comprehensive understanding
- **Research Design:** Convergence design chosen for unified understanding

Study Population

- **Population:** **5 Private chartered universities** in the Nairobi metropolitan area
- **Participants:** 596 PhD students, full-time faculty members, 5 university and 5 research librarians

Sampling

- **Purposive Sampling:** Selective identification of participants
- **Full/Total Population Sampling:** Examination of entire population for common characteristics
- **Sample Size:** Determined using SurveyMonkey calculator for statistical reliability

Data Collection

- Quantitative: Questionnaires for factual information
- Qualitative: Semi-structured interviews for in-depth insights



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Data Analysis

- Mixed Methods Approach: Convergence design for synthesis of quantitative and qualitative data
- Quantitative Data Analysis: IBM SPSS for statistical analysis
- Qualitative Data Analysis: Content analysis for identifying themes and patterns

Findings based on the objectives

Objective 2: Data Literacy Needs Assessment

- Identified a gap between library services offered and perceived data literacy needs.
- Noted low adoption of Data Management Plans (DMPs).
- Identified lack of education and training on metadata, data storage options, and researchers' perceptions of competence in research data management.

Objective 3: Organizational Infrastructure Assessment

- Identified lack of relevant organisational infrastructure, key data literacy-related policies and competent human resources (Library staff)
- Identified gaps hindering the viability of delivering data literacy services.



Cont'd

Objective 4: Technical Infrastructure Readiness Assessment

- Provided findings on the state of technical infrastructure readiness in selected private university libraries.
- Identified existing resources and deficiencies in necessary technical infrastructure.
- Highlighted gaps in technical infrastructure's appropriateness for implementing data literacy.

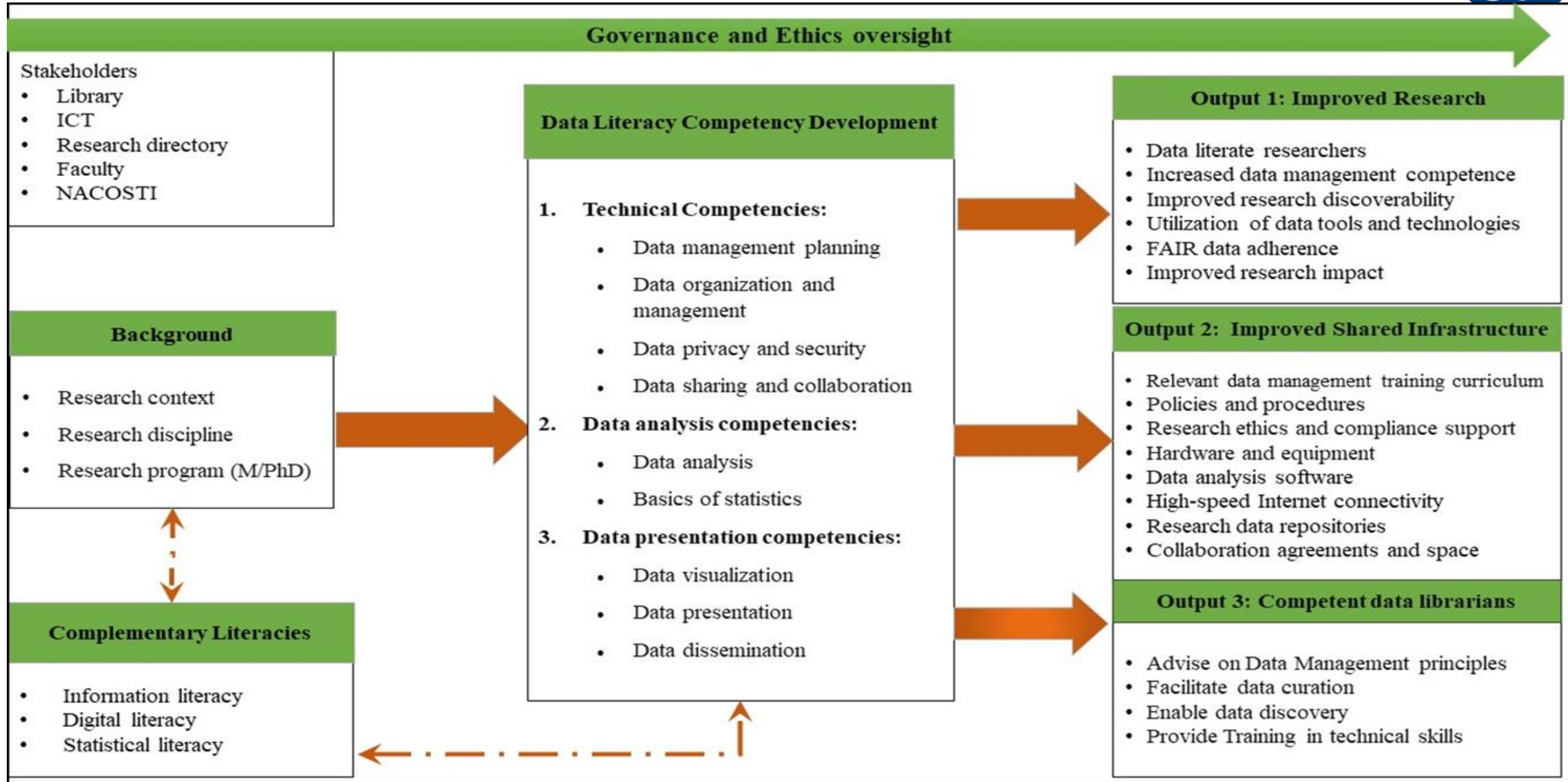


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Objective 1: Literature Review and Framework Development

- Successfully formulated a comprehensive data literacy framework integrating essential components from literature and study findings.
- Accompanied by a process model demonstrating the linear flow from literacy needs to process outputs.
- Emphasized the role of libraries in influencing data literacy among researchers.
- Prioritized critical areas for data literacy training programs.

Data literacy framework for Kenyan university libraries – output model



Recommendations

- improving data-related services, offering training on metadata creation and data management, and collaborating with stakeholders.
- Universities should prioritize policy development, invest in technical infrastructure, and provide training for librarians.
- Collaboration among stakeholders is essential to strengthen data literacy and align with global trends towards open science.

Limitations

- Funding
- Time
- One private university declined to grant permission for data collection despite providing all necessary supporting documents.



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