# Task 1:

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## 1.1 Approach for Studying Livestock Selling Decisions in Southern Kenya.

To comprehensively understand the challenges faced by local herders in southern Kenya regarding livestock selling decisions, I would propose a mixed-methods approach combining qualitative and quantitative research methods would be most effective.

Justifications for Choosing a Mixed-Methods Approach:

1. **Contextual Understanding**:

Qualitative methods such as interviews, focus group discussions, and participant observation would allow researchers to delve into the intricacies of the local context. This approach helps in understanding the socio-cultural factors, household needs, and traditional practices influencing livestock selling decisions.

1. **Quantitative Analysis**:

Quantitative methods, including statistical analysis and surveys, provide numerical data to quantify the extent and impact of livestock selling delays. These data are crucial for assessing the economic losses, livestock mortality rates, and the correlation between decision-making delays and climatic events like drought.

1. **Triangulation**:

By integrating qualitative and quantitative data, researchers can triangulate findings, enhancing the validity and reliability of the study. Triangulation allows for a more comprehensive understanding of the complex phenomenon of livestock selling decisions.

1. **Holistic Recommendations**:

A mixed-methods approach enables researchers to not only identify challenges but also propose holistic interventions. By combining insights from qualitative narratives with quantitative evidence, tailored interventions addressing both socio-cultural and economic aspects can be developed. This would ensure that the decisions made over time

## 1.2 Sampling Approach for Evaluating Biodiversity Changes.

To evaluate changes in biodiversity across an 8500 km2 area in response to evolving grazing regimes, a stratified random sampling approach would be appropriate.

Sampling Approach:

1. ***Stratification***:

Divide the study area into strata based on ecological zones, vegetation types, or land-use patterns. Ensuring representation of diverse ecosystems within the study area.

2. ***Random Sampling within Strata***:

Within each stratum, randomly select sample plots or transects to assess biodiversity. Random sampling ensures unbiased representation of different habitats and minimizes sampling bias.

3. ***Monitoring Protocol***:

Implement a standardized monitoring protocol to collect biodiversity data, including species richness, abundance, and composition. Use techniques such as quadrat sampling, line transects, or camera traps, depending on the target taxa and habitat characteristics.

4. ***Longitudinal Monitoring***:

Conduct repeated sampling over time to capture temporal changes in biodiversity in response to evolving grazing regimes. Longitudinal monitoring allows for the detection of trends and enables researchers to assess the resilience of ecosystems to grazing pressure.

5. ***Data Analysis***:

Analyse the biodiversity data using appropriate statistical methods, such as species accumulation curves, Shannon diversity index, or multivariate analysis techniques. Compare biodiversity metrics across different grazing regimes to evaluate their impact on ecosystem structure and composition.

By employing a stratified random sampling approach, researchers can obtain robust data on biodiversity changes across the study area, facilitating informed conservation and land management decisions.