

An Illustration of Double Counting and Under-Counting in Monitoring and Evaluation Using the Mkulima Project

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ABSTRACT

The Mkulima Project serves as a case study to illustrate double-counting and under-counting errors in monitoring and evaluation systems. Double counting occurs when beneficiaries are recorded more than once, inflating the reported numbers, as seen in the post-harvest management (PHM) and small and medium enterprises (SME) training sessions where 730 instances of double counting were identified. Conversely, undercounting happens when not all beneficiaries are recorded, leading to an understatement of the project's reach; in this case, incorporating both direct and indirect or primary and secondary beneficiaries revealed a total outreach of 720, surpassing the 500 targeted farmers. This example underscores the critical impact of accurate data reporting and the necessity for robust monitoring and evaluation systems to mitigate these errors.

Keywords: Monitoring and evaluation, data, double counting, Undercounting, direct beneficiaries, indirect beneficiaries

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1.0 Introduction

Monitoring and Evaluation (M&E) systems are established primarily to generate data that is central to data-driven, evidence-based decision-making, accountability, and learning from development interventions. Therefore, the quality of M&E data is crucial. The literature on monitoring and evaluation consistently emphasizes the importance of high-quality M&E data. The next three paragraphs provide examples highlighting the significance of quality in M&E data.

According to Kusek and Rist (2004), a monitoring system provides ongoing information through selected indicators regarding the direction, pace, and magnitude of change. Monitoring and evaluation have several complementary aspects. First, there is sequential complementarity, where monitoring generates questions that can be explored through evaluation, or vice versa, with evaluation uncovering new areas for monitoring. Second, information complementarity refers to the use of the same data for both monitoring and evaluation, but with different questions and analyses. Third, interactional complementarity involves managers using both monitoring and evaluation in tandem to guide and refine their initiatives.

Mertens and Wilson (2019) and Nguliki (2018) emphasize that the quality of data collected is crucial for evaluators to reach accurate conclusions about a program's functioning and effectiveness. Taylor and Balloch (2005) highlight that evaluations are often hindered by inconsistently collected data and a tendency to draw sweeping conclusions from limited information. Carlsson, Kohlin, and Ekblom (1994) note that economic analysis of projects must adhere to the rigorous standards of welfare economics, demanding substantial effort from both the analyst and the quality of the data. Brandon and Lombardi (2005) further explain that excessive detail can sometimes be counterproductive, as it may confuse or falsely imply accuracy when the underlying data is imprecise, and it can complicate the computation process.

Stufflebeam and Coryn (2014) emphasize that evaluations can focus on a variety of objects, including programs, projects, policies, proposals, products, equipment, services, concepts, theories, data, individuals, or organizations. However, informal evaluations are often prone to issues such as haphazard data collection, reliance on propaganda or misinformation, errors in judgment, undue influence from salespersons, bias from old preferences or prejudices, dependence on outdated information, inadequate or biased customer feedback, and making expedient choices.

The literature cited in the preceding paragraphs underscores the significant emphasis placed on data quality by various authors in the field of monitoring and evaluation. Particularly, there are five key traits of data quality: (i) accuracy, which pertains to whether the information collected is

correct; (ii) completeness, which concerns whether all necessary data is available; (iii) reliability, which refers to the consistency of data collection and analysis methods; (iv) relevance, which assesses whether the data is useful and genuinely needed; and (v) timeliness, which evaluates whether the data is collected in a timely manner.

In practice, common data errors in many projects and programs include double counting and undercounting. Double counting occurs when more data than the actual amount is recorded while undercounting happens when less data than the actual amount is recorded. These errors can affect data from various sources, including implemented projects, programs, policies, strategies, plans, budgets, activities, and other interventions.

This paper explores the issues of double counting and undercounting errors with the objective of contributing to the enhancement of monitoring and evaluation systems. By addressing these errors, the aim is to strengthen systems capable of generating high-quality data that supports informed decision-making, accountability, and learning.

2.0 Methodology

This paper is based on 15 years of field experience in addressing double counting and undercounting errors in development projects and programs in Tanzania. It outlines techniques and methods used by the author to prevent and mitigate these data quality errors. The paper aims to provide practitioners with practical insights and strategies for effectively managing double-counting and undercounting issues.

To illustrate double counting and undercounting errors in development projects and programs in Tanzania, a practical example is presented. The paper conveys key messages, including the sources and effects of these errors, as well as strategies for their prevention and mitigation.

According to the author:

- i. Double counting and undercounting are common data errors in many projects and programs.
- ii. Double counting refers to recording more data than what exists, while undercounting involves recording less data than is present.
- iii. In practice, these errors are often observed in outreach indicators, such as the number of beneficiaries supported by a project.
- iv. Weak monitoring and evaluation systems are particularly susceptible to both double-counting and undercounting errors.

3.0 MKULIMA Project

The author illustrates double counting and undercounting errors using the Mkulima Project. The Mkulima Project is a hypothetical case study created solely for this paper. *Disclaimer:* This example does not relate to any specific project, donor, beneficiary, or geographical location in Tanzania.

3.1 MKULIMA project description:

- Goal: To increase farmers' income by 20% through increased production, and productivity, reduced postharvest losses, and a profitable market for maize crops.
- Target: 500 smallholder farmers (SHF) from Mkulima Agricultural Marketing Cooperatives Society (AMCOS) in Mkulima village. Mkulima AMCOS has 1,000 SHF whereas MKULIMA village has 5,000 SHF.
- M&E frameworks: the project is guided by the theory of change (ToC) and logical framework (LF) with an outreach indicator - The number of smallholder farmers supported by the project
- Activities: smallholder farmers Training on good agriculture practices (GAP), post-harvest management (PHM), and small & medium enterprises (SME)
- Period: 1st January 2022 to 31st December 2022
- Reporting: quarterly report (operation and results report)
- Budget: Tanzanian shillings 2 billion
- Implementing agent: Local NGO
- Donor: Foreign Development Partner
- Project management: Project team and steering committee

4.0 MKULIMA Project Data reporting

Based on the Mkulima Project presented above, all planned project activities were appropriately implemented. Table 1 provides an operational report detailing data for each training activity (GAP, PHM, SME) across each quarter. It is important to note that the operational report includes information on processes, inputs, outputs, and lessons learned from the implemented activities. For example, a typical training activity will incur the following costs:

1. Training materials
2. Training venues
3. Meals
4. Transport/logistics
5. Trainer’s fee

Table 1: Operational Data

Activity	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
GAP Training	350				350
PHM Training		200	200		400
SME Training				400	400
Total					1,150

From an operational perspective, the project conducted GAP training for 350 farmers, PHM training for 400 farmers, and SME training for 400 farmers. The budget, as outlined in Table 1, is allocated for a total of 1,150 farmers.

In some organizations, operational reports are typically prepared by project officers and accountants, as they are responsible for planning and implementing project activities.

The M&E officer, who oversees project results data, may not always be able to attend all training sessions due to budget constraints and the number of concurrent training sessions. Consequently, the M&E officer may delegate data collection tasks and develop appropriate tools for project officers to use.

For the Mkulima Project, a data collection tool needs to be created to capture data for the outreach indicator from the three types of training. Table 2 in the following slide presents both operational and results data.

Table 2 Results Data

Activity	QUARTER 1		QUARTER 2		QUARTER 3		QUARTER 4		Total
	Operational data	No previous support	Operational data	No previous support	Operational data	No previous support	Operational data	No previous support	No previous support
GAP Training	350	350							350
PHM Training		200	10		200	10			20

SME Training							400	50	50
Total									420

Table 2 presents operational data, specifically the number of farmers who attended the training (GAP, PHM, SME). It includes a column for farmers who received project support (training) for the first time, indicating those without prior support from the project.

It is important to note that while target farmers were eligible to attend all trainings (GAP, PHM, SME), not all may have participated in every session. Some farmers might have prior knowledge of a skipped training, be absent, etc.

To avoid double counting in the outreach indicator, each farmer should be counted only once, regardless of the number of trainings attended. According to Table 2, the number of farmers who attended training sessions without previous project support are as follows: GAP (350), PHM (20), and SME (50). Thus, the data collection tool should capture comprehensive information, including demographics such as age, sex, education, occupation, marital status, and location.

Therefore, the Mkulima Project supported 420 out of 500 target smallholder farmers, achieving a performance rate of 84%.

Table 3 Double Counting Error

Activity	Operational data	Results data	Double Counting Error
GAP Training	350	350	0
PHM Training	400	20	380
SME Training	400	50	350
Total	1,150	420	730

Double counting errors can occur when an M&E system uses operational data as results data to report outreach indicators. In this case, the M&E system might report outreach data for 1,150 smallholder farmers, which is 230% of the target beneficiaries.

Table 3 illustrates the number of farmers counted more than once in each training session, as follows: GAP (0), PHM (380), and SME (350), with double counting errors highlighted in yellow. A total of 730 farmers were counted more than once, leading to issues of double counting.

Table 4 Under counting Error

Activity	Results data
GAP Training	350
PHM Training	20
SME Training	50
Total	420

Projects typically support only a segment of the population due to limitations such as scope, time, and budget. In practice, projects are implemented to assist target beneficiaries within a larger population.

For instance, in the Mkulima Project, 500 farmers associated with Mkulima AMCOS were targeted, although the AMCOS has 1,000 members and Mkulima village has 5,000 farmers.

The project was not designed to support the additional 4,500 farmers in the village. However, these non-targeted farmers may still benefit indirectly from the project activities. Depending on the relationship between the project beneficiaries and the rest of the village farmers, there is a possibility that untargeted farmers could gain knowledge and skills from the targeted farmers.

In some cases, untargeted farmers might effectively apply the knowledge and skills acquired through interactions with targeted farmers, potentially achieving better performance than the targeted group.

Table 5: Primary and secondary beneficiaries

Activity	Operational Data	Results data		
		Primary Beneficiaries	Secondary Beneficiaries	Total Beneficiaries
GAP Training	350	350	50	400
PHM Training	400	20	100	120
SME Training	400	50	150	200
Total	1,150	420	300	720

Table 5 presents results data that includes both intended and unintended beneficiaries. Intended beneficiaries are the direct or primary beneficiaries targeted by the project, while unintended beneficiaries are indirect or secondary beneficiaries who received support through the primary beneficiaries. These secondary beneficiaries can indicate project impact, spillover effects, high utility of project interventions, and project sustainability. Essentially, secondary beneficiaries have leveraged the Mkulima Project to gain knowledge and skills.

Incorporating secondary beneficiaries—GAP (50 farmers), PHM (100 farmers), and SME (150 farmers)—into the outreach results, the new total reaches 720 beneficiaries (420 primary and 300 secondary). Therefore, the project interventions have reached 720 beneficiaries, which represents 144% of the 500 targeted smallholder farmers.

5.0 How Projects Treat Secondary Beneficiaries

Projects and organizations handle secondary beneficiaries in various ways. Issues surrounding secondary beneficiaries include the level of engagement and the extent of benefits required for them to be considered as secondary beneficiaries. The validation and verification of secondary beneficiaries can be complex, leading some projects and organizations to exclude secondary beneficiaries from their reported results.

Secondary beneficiaries may be treated in three different ways:

- i. *Exclusion*: Organizations that do not count secondary beneficiaries as part of the project beneficiaries because they are not recognized by the project design or policies.
- ii. *Separate Counting*: Organizations that count secondary beneficiaries separately, assuming they have received partial benefits without direct project contact.
- iii. *Inclusive Counting*: Organizations that include secondary beneficiaries with primary beneficiaries, considering that target beneficiaries act as agents transferring project interventions to a broader audience.

6.0 Overcoming double-counting and under-counting errors

Overcoming double-counting and undercounting errors is crucial. Double counting exaggerates project outreach, which is unethical while undercounting undermines the project's achievements.

To address these issues, projects, and organizations should focus on the following factors affecting monitoring and evaluation systems:

- i. *Enhance Skills and Knowledge*: Improve the skills and knowledge of monitoring and evaluation personnel.
- ii. *Develop Comprehensive Data Tools*: Create data collection tools that integrate measures to address both double counting and undercounting.
- iii. *Allocate Adequate Resources*: Provide sufficient budget and time for monitoring and evaluation activities.
- iv. *Implement M&E Policies*: Establish policies to guide the management of double counting and undercounting phenomena.

7.0 Effects of undercounting and double counting errors

Undercounting and overcounting errors have the following effects

- i. **Undercounting:** This leads to an underreporting or underestimation of the actual results and impacts attributable to the intervention.
- ii. **Double Counting:** Results in an exaggeration of the actual results and impact attributable to the intervention.
- iii. **Ethical Concerns:** Double counting may be perceived as cheating and unethical, with potential negative consequences.
- iv. **Misleading Data:** Both undercounting and double-counting errors can produce misleading data, affecting policy, strategy, planning, decision-making, accountability, and learning.
- v. **Systemic Issues:** These errors indicate poor or weak monitoring and evaluation systems and project management practices.

8.0 Conclusion

In this paper, the author has examined double-counting and undercounting errors within monitoring and evaluation systems. The paper illustrates the sources, effects, prevention, and mitigation of these errors. In conclusion, M&E systems must address counting errors to enhance the quality of the data generated.

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