

Beyond adoption: Understanding innovation disadoption among smallholder farmers in rural Tanzania

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Background

- Innovation adoption can improve rural livelihoods (Brüssow et al., 2017), yet smallholder farmers often do not maintain these technologies beyond project lifetime (Razafimahatratra et al., 2021). The reasons for disadoption remain understudied (Birhanu & Jensen, 2023).
- To explain disadoption, adoption theory is commonly applied – overlooking the distinct decision-making context of the post-adoption phase (Chinseu et al., 2018).
- This study explores the subjective reasons for disadoption in rural Tanzania and examines how well they align with established innovation theories and empirical literature.

Data and Methods

- Focus Group Discussions with 19 purposively selected farming households and semi-structured interviews with 15 key informants in three villages of Kilosa District, Tanzania, in March 2024, as part of a long-term panel survey (TASEP, N=820).
- Range of agricultural and life-enhancing innovations, such as rainwater harvesting, improved cooking stoves, and kitchen gardening, project-based implementation.
- Thematic analysis conducted in MAXQDA, following Braun & Clarke (2006), inductive coding approach and iterative theme development.

Improved stoves



Rainwater harvesting



Kitchen gardening



Results

Five main themes identified, each representing a distinct set of factors contributing to disadoption. Frequency of mentions in parentheses.

Themes	Subthemes	Illustrative Comments
1. Structural Barriers to Sustained Use [32]	1.1 Labor and Health Constraints [4] 1.2 Financial Constraints [9] 1.3 Environmental and Climate Constraints [19]	“People stopped [kitchen gardening] because of drought and the difficulty in accessing water.” (Ilakala, Female, FGD)
2. Innovation Burdens and Incompatibility [60]	2.1 Practical Burdens and Misalignment with Farming Life [33] 2.2 Durability and Maintenance Issues [17] 2.3 Familiar or Superior Alternatives [10]	“Planting in rows takes a lot of time. If someone has a large farm, they find it difficult to plant in rows due to the time and effort required.” (Ilakala, Male, FGD)
3. Social Influence and Group Dynamics[23]	3.1 Internal Group Challenges [15] 3.2 Social Perception and Recognition [8]	„They praise someone more for farming a large area, even if it’s done poorly.” (Ilakala, Muslim Leader)
4. Lacking Institutional Support and Follow-up [13]		“A student needs motivation from time to time. For our groups to continue, you need to be coming here.” (Changarawe, Male, FGD)
5. Internal Barriers and Behavioral Tendencies [48]	5.1 Attitudinal and Motivational Challenges [24] 5.2 Knowledge Gaps and Perceived Irrelevance [10] 5.3 Habitual Behavior and Cultural Anchoring [8] 5.4 Dependency and Low Self-Efficacy [6]	“People might not appreciate them [improved stoves] enough. When you get something easily, you don’t value it as much, so maintaining it becomes a problem.” (Changarawe, Female, FGD) „I had one [improved stove] built, but when it broke, we felt lazy to fix it.” (Nyali, Female, FGD)

Discussion

- Several themes (*Environmental and Climate Constraints*, *Durability and Maintenance Issues*, *Internal Group Challenges*) are not reflected in established adoption theories (Rogers’ IDP, TPB, UTAUT, TAM), while *Familiar or Superior Alternatives* and *Knowledge Gaps and Perceived Irrelevance* are only indirectly addressed.
- Empirically, *Structural Barriers*, *Practical Burdens*, *Durability Issues*, and *Lack of Institutional Support* align with existing findings (Khoza et al., 2022; Grabowski et al., 2016), whereas *Climate Constraints*, *Preference for Alternatives*, and *Social Perception and Recognition* are rarely reported (Chinseu et al. 2018, Mtyelwa et al. 2022).
- *Habitual Behavior and Cultural Anchoring* has not been documented so far. *Internal Barriers and Behavioral Tendencies* remain understudied

Outlook

- Conceptual advancements are needed to move beyond adoption theory in explaining disadoption.
- More research is needed on intrinsic motives and the role of social perception and recognition in disadoption decisions.

Bibliography

- Birhanu, M. Y., & Jensen, N. (2023). Dynamics of improved agricultural technologies adoption: The chicken and maize paradox in Ethiopia. *Sustainable Futures*, 5, 100112.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Brüssow, K., Faße, A., & Grote, U. (2017). Implications of climate-smart strategy adoption by farm households for food security in Tanzania. *Food security*, 9, 1203-1218.
- Chinseu, E., Dougill, A., & Stringer, L. (2019). Why do smallholder farmers dis-adopt conservation agriculture? Insights from Malawi. *Land Degradation & Development*, 30(5), 533-543.
- Grabowski, P. P., Kerr, J. M., Haggblade, S., & Kabwe, S. (2016). Determinants of adoption and disadoption of minimum tillage by cotton farmers in eastern Zambia. *Agriculture, Ecosystems & Environment*, 231, 54-67.
- Khoza, S., van Niekerk, D., & Nema-konde, L. D. (2022). Gendered vulnerability and inequality: understanding drivers of climate-smart agriculture dis- and nonadoption among smallholder farmers in Malawi and Zambia. *Ecology and Society*, 27(4).
- Mtyelwa, C., Yusuf, S. F. G., & Popoola, O. O. (2022). Adoption of in-field rainwater harvesting: Insights from smallholder farmers in Raymond Mhlaba Local Municipality, Eastern Cape province, South Africa. *South African Journal of Agricultural Extension*, 50(2), 81-100.
- Razafimahatratra, H. M., Bigne-bat, C., David-Benz, H., Béliers, J. F., & Penot, E. (2021). Tryout and (Dis) adoption of conservation agriculture. Evidence from Western Madagascar. *Land Use Policy*, 100, 104929.