



Possible pathway and interactions for integrating mechanisation into sustainable rice production in Ghana

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Introduction

Rice is a staple food in Ghana, and its local production has increased steadily. In 2020, the country produced 987,000 tons of rice, up from 721,465 tons in 2017. Smallholder farmers play a vital role in rice production.

To ensure continuous production, improve yields, and reduce food insecurity, farmers are being introduced to sustainable small-scale rice production methods that are environmentally friendly. Smallholder agricultural production is a crucial aspect of Ghanaian livelihoods, providing an essential economic activity for most of the population. Mechanized smallholder rice production can help small-scale farmers achieve financial gains and create a sustainable agricultural production value chain based on practical agroecological principles.

In order to achieve effective sustainable rice production mechanisation, the needed stakeholder interactions must be identified and promoted.

Objective: Identify stakeholder engagement and pathways for sustainable, mechanised rice production.

Methodology

The study uses primary data from a field survey of 320 farmers within Asutsuare, a rice production hub in Southern Ghana, key informant interviews with major stakeholders and secondary data from various sources. These data were analysed to determine the existing interactions and the needed interactions.

Results

The stakeholders involved in promoting the effective use of machinery include equipment manufacturers, research and development experts, equipment sales (consisting of importers, sales and after-sales personnel), NGOs, development agencies, government (including Agricultural Engineering Services Directorate (AESD), Ghana Standard Authority, Extension agents, and the central government) and smallholder farmers (as depicted in Figure 1).

These stakeholders need mutually beneficial interactions to ensure effective mechanisation for smallholder farmers. Figure 1 also indicates the level of interest and influence of each stakeholder.

Development agencies and government entities, such as the Ghana Standards Authority, extension agents, and the central government, play a critical role in providing funding, regulations, and frameworks for smallholder mechanisation practices. The success of agricultural production mechanisation heavily relies on the involvement of machinery manufacturers, operators, and extension agents in delivering mechanisation services to the farming community.

It is also essential to strengthen the role of after-sales technicians in maintaining machinery to ensure its efficient and continuous operation. Smallholder farmers, R&D experts, manufacturers, and the Ghana Standards Authority must collaborate and interact to develop and improve mechanisation projects and technologies. These interactions are necessary to create a robust support system around machinery use and achieve effective Smallholder Agricultural Mechanisation.

Conclusions

The study identifies necessary stakeholder engagement and interaction pathways to enhance the availability of equipment, spare parts, and timely interventions through R&D, among other benefits, by improving interactions and engagements between smallholder farmers, R&D experts, manufacturers, government, and development agencies.

Strengthening collaborations among stakeholders is vital to maximise the effectiveness of the models. Specifically, it is crucial to maintain strong connections between machinery operators, manufacturers, and smallholder farmers residing in farming communities to ensure that farmers have access to properly maintained machinery.

These interactions can be replicated easily in Sub-Saharan African farming communities with similar dynamics.

Furthermore, additional studies are necessary to identify the constraints on local production and supply of equipment that can support sustainable agricultural mechanisation to small-scale African rice farmers.

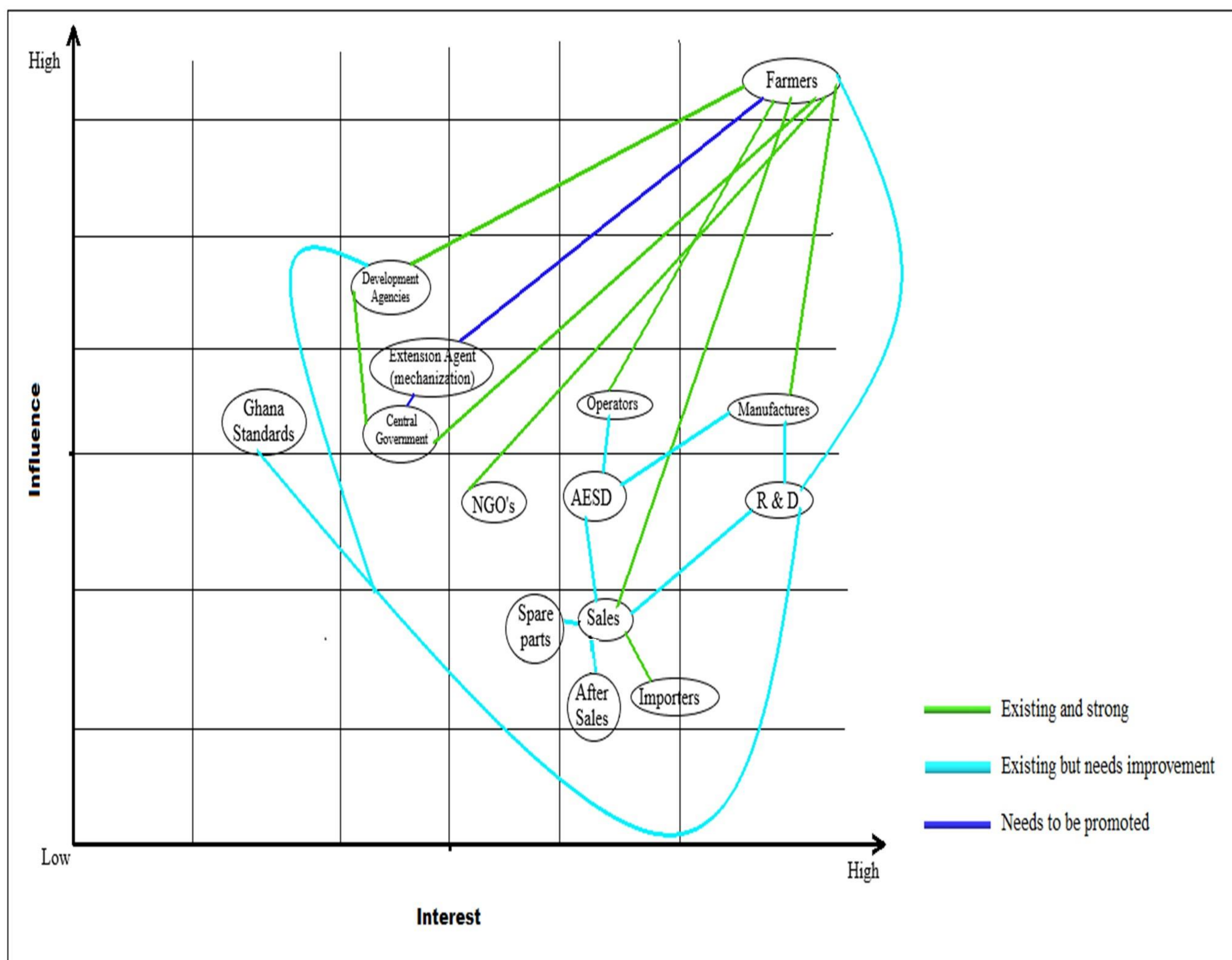


Figure 1. Stakeholder map showing the levels of interactions

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