

# Maziwa Zaidi (More Milk) in Tanzania

## Determinants of technical efficiency among smallholder dairy farmers in Tanzania

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### Key messages

- Identifying the determinants of technical efficiency helps to determine policy options to enhance dairy production efficiency and inform investments in Tanzanian dairy value chains.
- Considerable scope is identified to improve dairy production in Tanzania, and targeting is enabled by the differential results across districts.
- The proportion of dairy farmers scoring more than 90% technical efficiency is higher in Kilosa (27%) and Lushoto (24%). The modal technical efficiency score is in the range of 80 to 90% in Handeni district and 70 to 80% in the districts of Kilosa, Mvomero and Lushoto. The overall average technical efficiency is about 80%.
- Credit access, training, group membership and female household labor would improve technical efficiency (reduce inefficiency).
- Recommended policy actions are: improve access to credit and relevant training, promote establishment and growth of farmer organizations; and encourage women farmers to engage in dairy production

### Opportunities to invest and scale

- Make dairy production inputs accessible by smallholder farmers
- Improve access to credit and strengthening Savings and Credit Co-operative Society (SACCOs).
- Provide dairy production specific training to farmers.
- Help establish and grow producer organizations.
- Provide incentives to encourage women participation in dairy production.

### Objectives and approach

- Current investments in commercial dairy production are mostly restricted to high density population areas in highland and peri-urban locations.
- It is not clear the extent to which pre-commercial dairy farmers living in less intensive marginal areas can be targeted to become more commercial.
- The main objective of this study is to identify the determinant factors that affect the technical efficiency of smallholder dairy farms in Tanzania.
- This study uses household data collected from randomly selected households (from mostly pre-commercial to more commercial production systems in four districts in Morogoro and Tanga regions) and employs stochastic frontier analysis (SFA) approach to derive a statistical measure of technical efficiency and efficiency drivers.

### Key results

Farm level investments that increase the *number of cattle, cows and cross breeds* and increase *veterinary and feed input use*, raise productivity until the stage of diminishing marginal returns where marginal output starts to decrease with every additional unit of the inputs and subsequent decrease in total output.

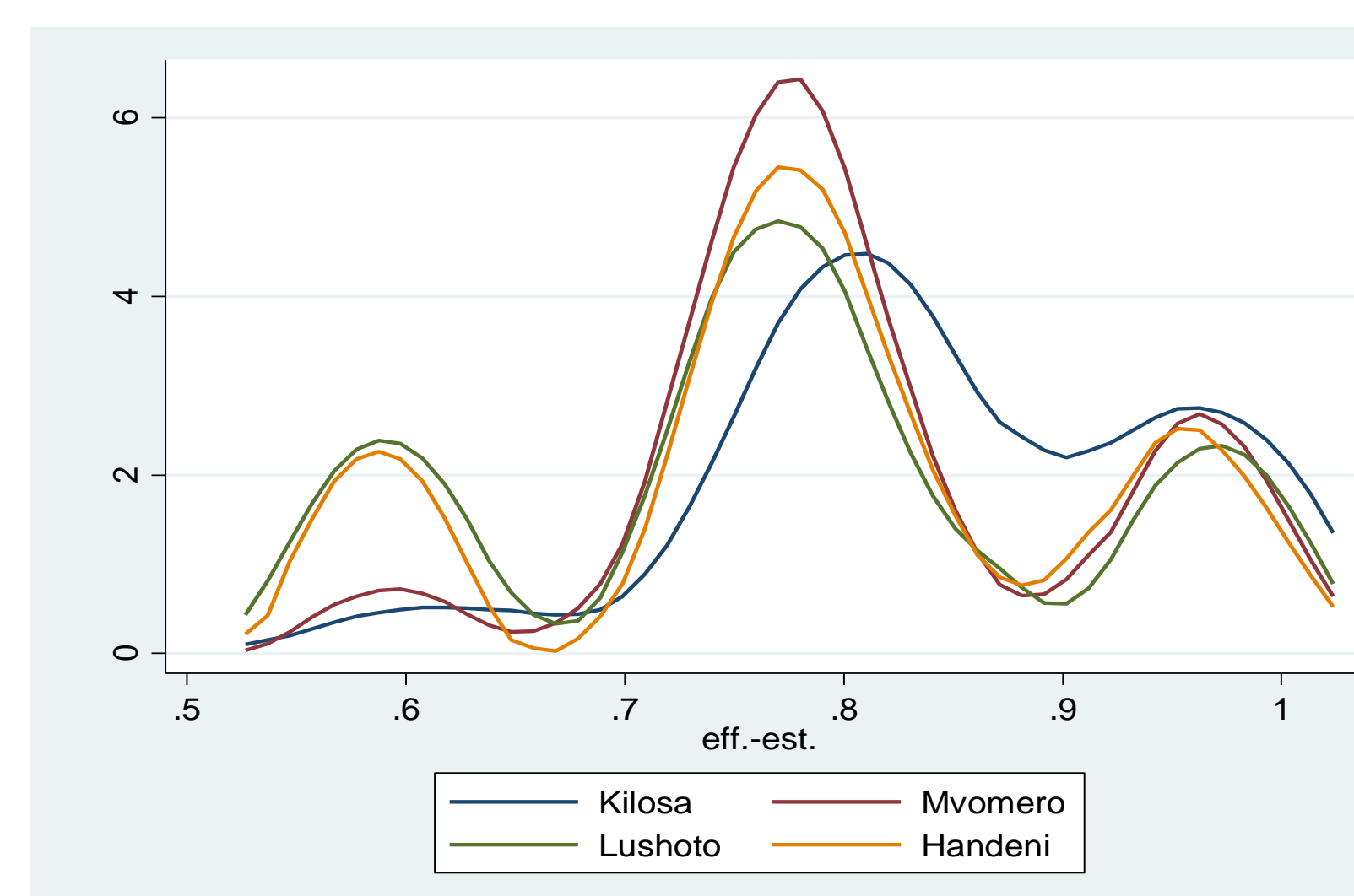
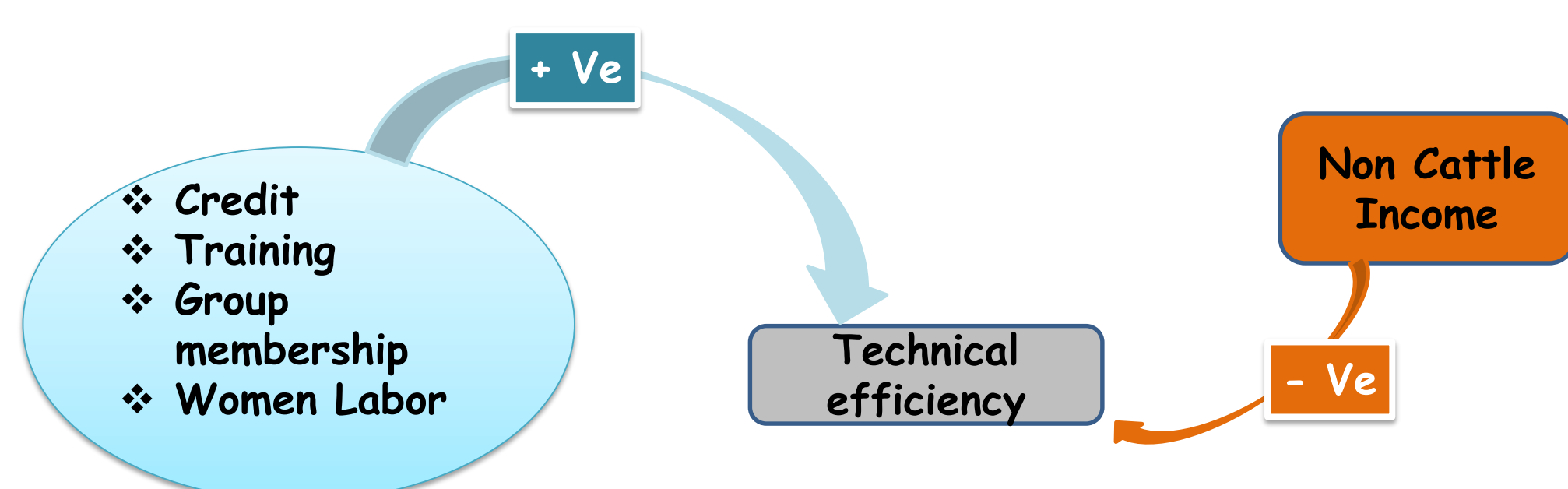


Figure 1: Kernel density of technical efficiency scores by Districts

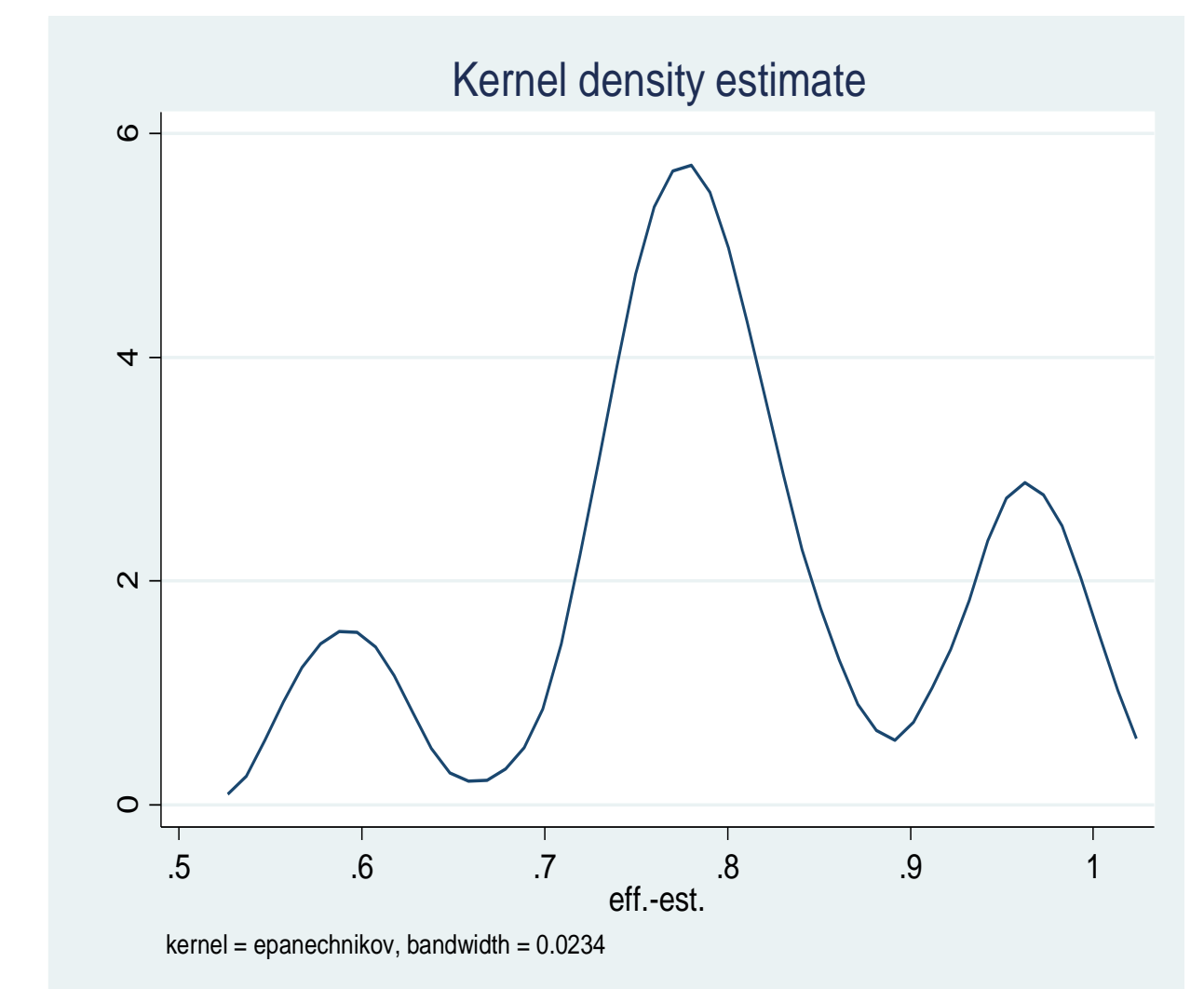
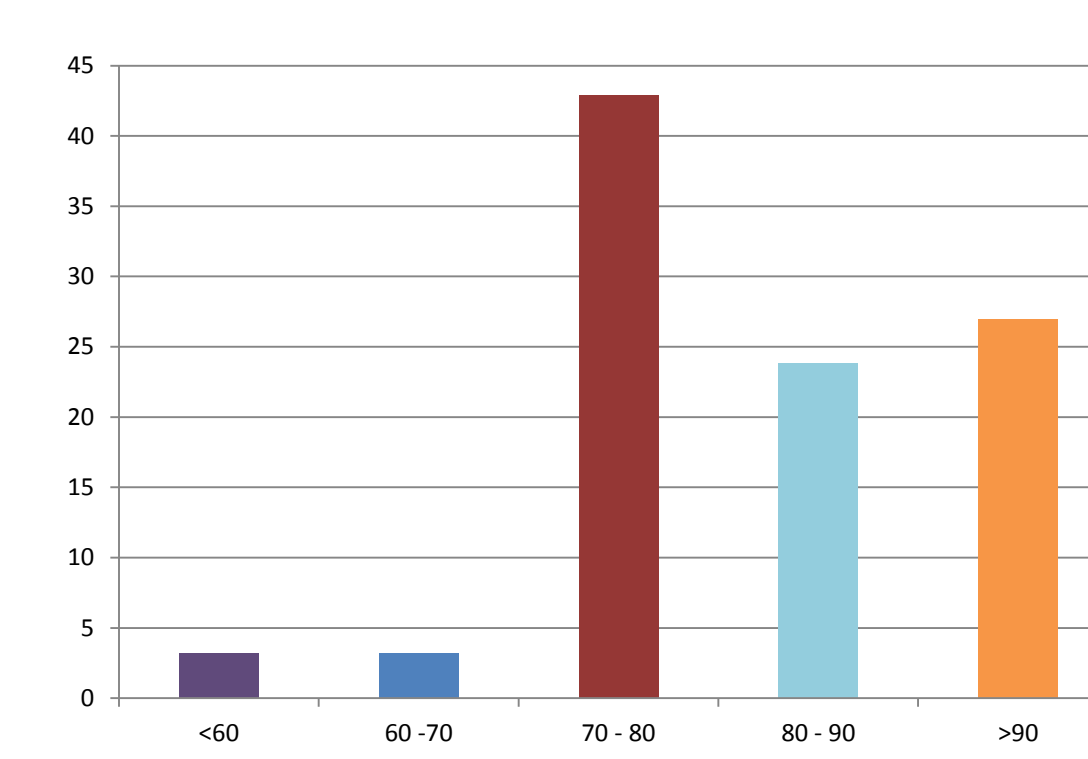
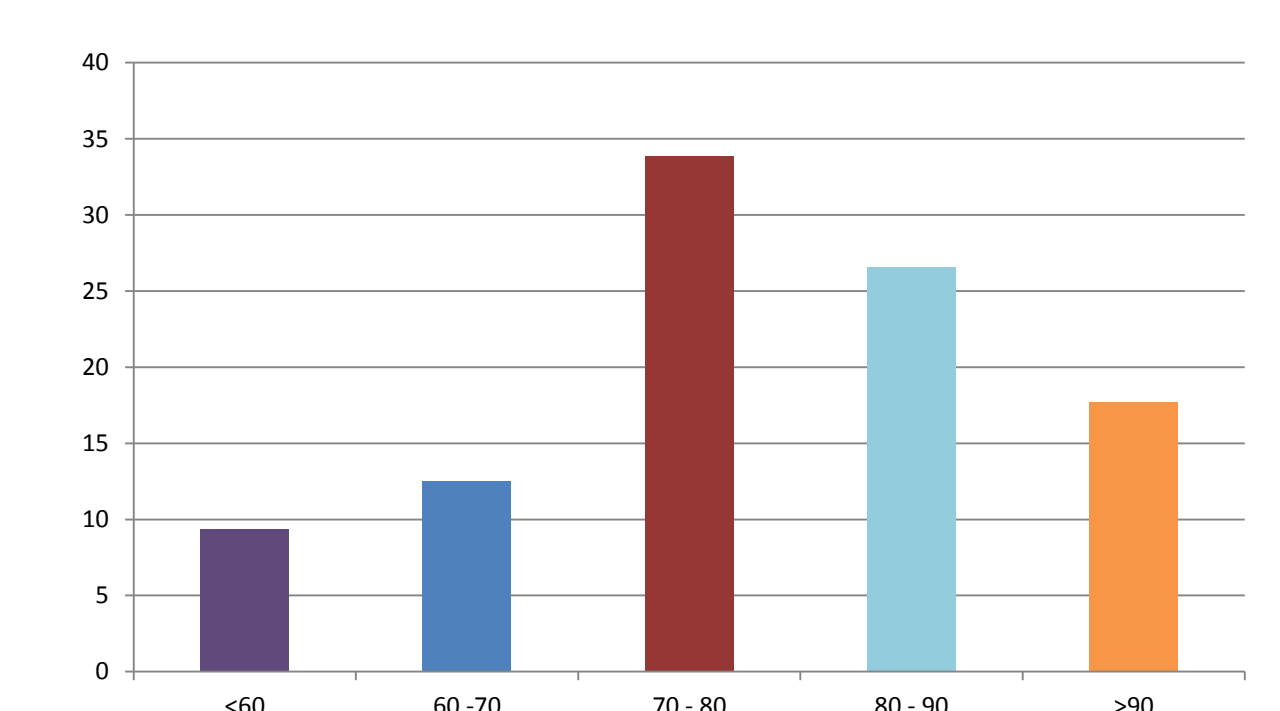


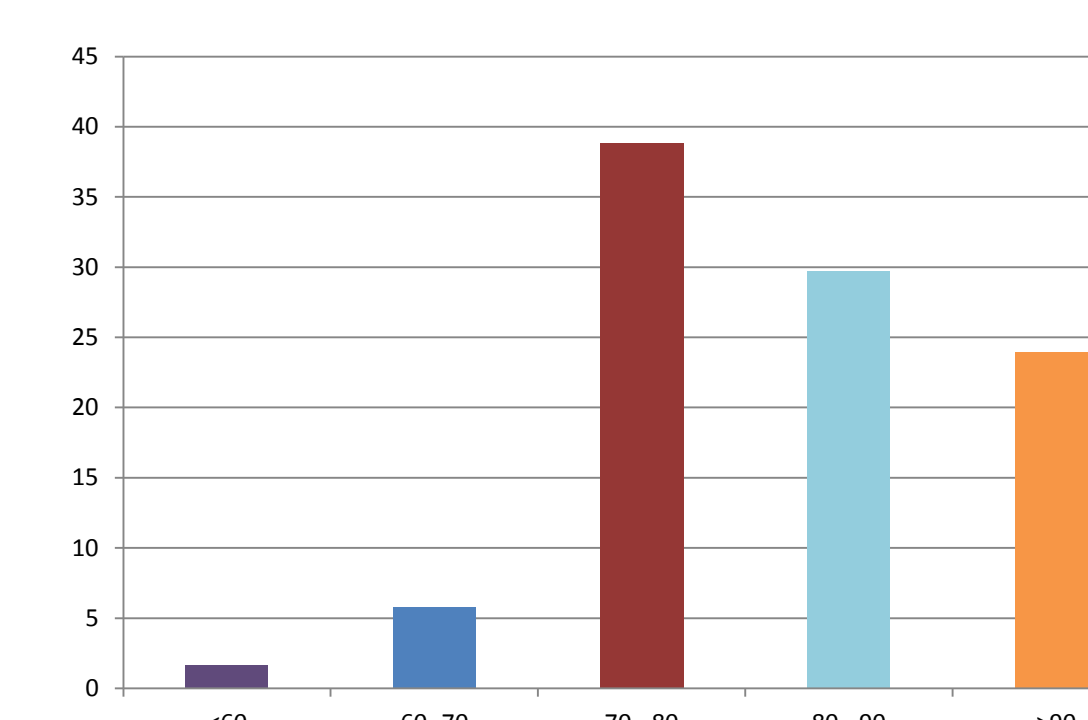
Figure 2: Kernel density of technical efficiency, overall average TE= 80%



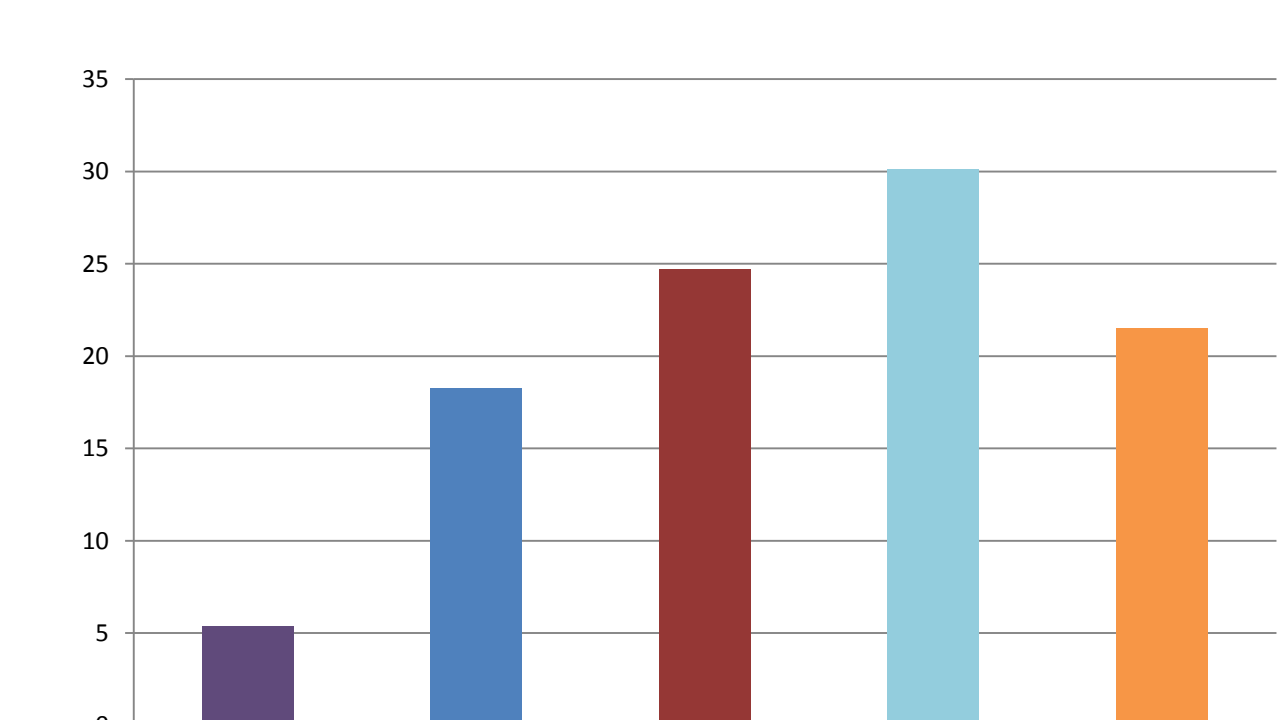
Kilosa (N = 63; producers above 90% TE = 27%; modal class = 70-80%)



Mvomero (N = 192; producers above 90% TE = 18%; modal class = 70-80%)



Lushoto (N = 121; producers above 90% TE = 24%; modal class = 70-80%)



Handeni (N = 93; producers above 90% TE = 22%; modal class = 80-90%)

Figure 3. Proportion of dairy producers by district and technical efficiency class

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