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Viable Approaches for Advancing Rural Livelihoods through Agriculture in Tanzania

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A B S T R A C T

About 37.6% of people in rural Tanzania are poor and 28.2% are food Poverty is 9.7%. Economic growth has not translated into a notable reduction of poverty. The major issue is how to accelerate economic growth in rural areas, where agriculture remains the major source of livelihood. Purposefully, the current study selects to analyse crop chain and livelihoods in one pure cash-crop and one mixed crop; tobacco and paddy, respectively. The study argues that interventions in agriculture have concentrated on the up-stream levels of value chains; but critical gaps are downstream, involving marketing, reinvestment in agriculture and household expenditure patterns of the income earned. The study finds that *hardware* aspects (inputs, land, farming mechanics) are important but need to include *agro-techno-ware* (e.g. labour/time saving technologies*)*, improved *agro-human ware* (education, modern agro-skills, credit and business skills) and *organo-ware* (functional cooperatives, networks, etc.). Multiple interventions for the entire crop value-addition chain should be applied.

Introduction

Despite recent reports that Tanzania has made progress with some of the MDGs (URT, 2011), poverty reduction remains a serious national challenge at 33.6% and 16.6% for basic needs and food poverty, respectively (MKUKUTA II, 2010). Poverty is especially a rural issue given that majority of poor Tanzanians (83.4%) live in rural areas. By default, agriculture is the main source of livelihood in rural areas (ADB,

2006)[1]. Such a situation makes agriculture critically important for economic growth, poverty reduction and food security, not only for the rural but also the urban population.

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[1]Rural activities are predominantly food and export crop production, livestock production, fishing and production of forestry products, notwithstanding environmental concerns

The Government, with support from development partners and other stakeholders, has stepped up efforts to revitalize agriculture, including amplification of the sector's critical role in the development process. The on-going initiatives include, for example, the *Kilimo Kwanza* which is focused on addressing the increasing food insecurity concerns and transforming Tanzania into a regional bread-basket. Included is also the Southern Agricultural Growth Corridor Programme, which initially involves the country's leading three agricultural regions, i.e. Morogoro, Iringa and Mbeya.

Paradoxically, despite its importance in economic growth and rural development, agriculture is currently not attractive to investors, particularly domestic ones; presumably because it is not as profitable as other competing sectors. The reasons for this situation are several, including policy issues. For example, the NEPAD–OECD's *Draft Policy Framework for Investment in Agriculture* (2011) observes that:

The quality of investment policies directly influences the decisions of all investors, be it they are small or large, domestic or foreign. These policies form the basis of a healthy and attractive business climate. Through the promotion of transparency, non-discrimination and property rights, they can lead to increased investment in the agriculture sector. At the same time, reaping the full benefits of investment in agriculture requires responsible behaviour by both government and investors and effective co-ordination between them (NEPAD–OECD, 2011:6).

The draft Policy Framework for Investment further argues that governments need to create a favourable climate for investment and improving regulatory quality and public sector integrity.

Despite considerable challenges in revamping agriculture, Amani & Mkumbo (2012) observe that economic growth in Tanzania has increased substantially and respectively from 4.1% in 1998 to 7.0% in 2010 with agricultural sector contributing about 23.7% of GDP (2011), slightly surpassing other sectors. Other contributions came from services, manufacturing and mining. Nonetheless, in real terms, the contribution of agriculture to GDP up to 2010 has been declining.

Tanzania's agriculture has remained largely traditional and highly subsistence-oriented and smallholder-production system since independence in 1961. Small-farms produce a major portion of the country's food. The country's agricultural potential is largely underdeveloped. Only 11 per cent of the total land area suitable for agriculture (about 44 million hectares) is under cultivation, mostly by smallholder farmers (URT, 2012). The agriculture sector contributes about 23.7% of GDP (2011) and employs about 77% of the total workforce in Tanzania (ILFS, 2006). As indicated earlier, farming is generally carried out on a small scale, with 85% of arable land used by smallholders at an average plot-size of 0.12 per hectare.

Poverty is essentially a rural phenomenon in Tanzania where about 37.6% (2007) of the people are poor; and 18.4% are food poor, implying that the income they earn cannot afford enough calorific food consumption for their households. About 75% of the Tanzanian population strive to live in rural areas; their share contribution in national GDP is only about 23.7%, less than a quarter though their number stands at 75% of the total national population.

The average growth rate of the agriculture sector has been 4.2 per cent, less than the

national average of 6.7 per cent during the last decade (FYDP, 2012). The relatively low growth of the sector is therefore a concern for rural development and poverty reduction efforts. Overall then, the sustained growth in national GDP has not translated into a notable reduction of poverty. The proportion of the population below the poverty line was 33.6 per cent in 2007, only slightly below 35.7 per cent recorded in 2001 (FYDP 2012). The proportion of rural population below the poverty line was 40.8% in 1991/92; and seventeen years down the road in 2007, rural poverty had declined to only 37.6% i.e. down by only 3.2 percentage points during the period. To the contrary, urban poverty in Dar es Salaam declined by 11.7 percentage points, or more than three times as much as the decline in rural areas. Therefore, economic growth is alarmingly too little in rural areas and in particular in the agriculture sector. This has a crosscutting relative low performance of the indicators of the wellbeing of the rural population.

The Research Problem

The major issue is how to accelerate economic growth and social development in rural areas, where agriculture remains solely the major source of livelihood. But more specifically, despite all the efforts exerted to improve agriculture in Tanzania, the country has not yet been able to transform livelihoods and wellbeing of its agrarian communities. Analysis of the targeting and adequacy of efforts exerted to revamp livelihoods of agrarian communities is crucial.More knowledge on how farmers' incomes respond to specific incentives along the value-addition chains in agribusiness is needed. There are potential gaps and opportunities in any given crop value-addition chain, which need to be identified and dealt with or taped towards unlocking growth potentials in rural areas.

The objectives of this study includes, the overall objective of undertaking an analysis of crop value-addition chains is to explore potentials for unlocking rural growth and transformation in Tanzania. Specifically, the study seeks to research on viable alternatives for accelerating sustainable advancement of livelihoods of smallholder farmers in the agriculture sector, i.e. empowering smallholder farmers to sustainably transform surplus crop yields into either further investment in the sector/other sectors and at the same time enhance their wellbeing.

Research Questions

What makes smallholder farmers' so inelastic to agribusiness incentives and the generic economic growth in Tanzania?

What are the alternative approaches for unlocking the agricultural potentials for enhancing rural livelihoods?

Is the issue of rural livelihoods advancement crop specific? Community and Cultural specific? Climate specific? What about institutional attributes? Then, what are the policy implications on growth?

Rural development problem is a long standing issue in which four predominant models of development have evolved. The immediate post-war rural development model centered on the agricultural sector. Increasing food production was the first priority and other objectives, such as enhancing rural employment and services, were seen as following directly from the production support given to the agricultural sector. However, with time, the approach changed, shifting to multi-sectoral, territorial and local approaches. Multi-sectoral policy approach recognizes the limits to agricultural-production support and sees agriculture as one of several economic

sectors through which the development objectives can be attained. The focus may still be on farming, but there is encouragement for agricultural diversification.

Territorial approach recognizes the wider interactions within the rural economy and the importance of social and environmental as well as economic issues. Finally, the differentiation between rural areas and the variation in individual circumstances within areas promotes a search for actions that recognize the specificity of solutions at most local levels. These changes have reflected both forces fundamentally associated with national economic change and other factors more governed by local circumstances. And they have major implications for the methodologies that are relevant for the analysis of rural problems and the evaluation of policies.

Paddy and Tobacco Production in Tanzania

Paddy Production in Tanzania

Rice is the second most important food and commercial crop in Tanzania after maize; it is among the major sources of employment, income and food security for Tanzania farming households. Tanzania is the second largest producer of rice in Southern Africaafter Madagascar with production level of 1.1 million tons (FAOSTAT, 2010). Rice cultivated area by 2012 was 720,000 hectares, and the average yield per hectare from 2003-2012 was 1.8 tons per ha – very low indeed.

Rice is mostly grown in Mwanza, Shinyanga (Bariadi & Maswa), Morogoro (Kilombero, Wami- Dakawe); Tabora (Igunga), Kilimajaro (lower Moshi), Coast (Rufiji, Lindi), Mbeya (Mbarali, Kyela, Kapunga)

and Rukwa Regions. 25% of the national rice production comes from 2 regions: Mbeya and Morogoro. Rice production in Tanzania is mainly done by small and medium size rice farmers. However, there have been a numberof large scale mechanized rice schemes in the country (mainly for export). Marketing of rice is done through private markets as well as through the mixed crop board, under the Ministry of Agriculture, Food Security and Cooperatives.

FAO statistics show that rice-growing-area rose from 439,300 hectares in 1997 to 720,000 hectares in 2010; of which 90% is managed by small-scale farmers with holdings of 0.5 to 3.0 ha of land each. At the same time, rice production increased from 550,000 MT of un-milled rice (equivalent to 330,000 MT of milled rice) in 1997 to 1,104,890 MT (equivalent to 662,934 MT of milled rice) in 2010; representing a growth rate of 13.1% per year. Tanzania's productivity did not change much and varied from 1.2 to 2.4 MT/ha. The low yield is mainly caused by the use of low-yielding varieties, drought, low soil fertility, weed infestations, and the prevalence of insect pests and diseases and birds.

Although substantial volumes of rice are produced in Tanzania, the domestic crop is not even very price competitive in the local market vis-a-vis rigidly taxed imports because of relatively high production and transaction costs. The market is dominated by products (blended rice) of a quality that delivers the most adequate nutrition at the cheapest price (EUCORD, 2012).

Rice value-addition chain in Tanzania begins with farmers buying inputs and producing grain that is sold to either assemblers or consolidators (local traders) or agents of larger traders. These actors operate

in rural areas and will in turn sell to traders who transport rice to urban centers for sales to millers and eventually to retailers. The larger trading companies are vertically integrated and transport, store, and mill rice to be sold in both urban and rural retail outlets. At the same time, rural millers buy rice from assemblers or from producers directly to sell to retail outlets (*op. cit)*

Tobacco Production in Tanzania

Tobacco was introduced in Tanzania during colonial period in the 1930s. The crop has gone through several phases- a reflection of the political and economic orientation of the country during the process of development. In Tanzania, tobacco is one of the major agricultural export crops, being the third largest foreign exchange earner after coffee and cashew nuts (ESRF, 2006). The crop is the main source of income to some 72,000 smallholder farmers who are striving to get, or stay, out of poverty. It also offers employment to many Tanzanians in both tobacco farms and in the three processing factories in Morogoro and Ruvuma regions. In addition, the crop provides raw material for cigarette manufacturing factories, thus offering further employment opportunities in the country (Rweyemamu and Kimaro, 2006).In Tanzania, tobacco is widely grown in Singida(Manyoni), Katavi(Mpanda), Tabora (Uyui, Urambo, Sikonge and Tabora urban), Shinyanga (Kahama and Bukombe), Kigoma (Kasulu and Kibondo), Kagera(Biharamulo), Ruvuma (Namtumbo, Mbinga and Songea), Iringa and Mbeya (Chunya).

Tobacco is produced under farming contract arrangement between growersand buyers in which growers would grow a crop compliant with the market requirements on an understanding that the growers sell it to their contract buyers at a price negotiated and agreed between the two parties in the Tobacco Council[2].Tobacco buying companies engaged in the aforesaid arrangement include: - Tanzania Leaf Tobacco Company (TLTC) and Alliance One Tobacco Tanzania Ltd (AOTTL). Small holder growers are organized into Primary Cooperative Societies. The cooperative societies are in turn affiliated into Cooperative Unions which are affiliated into one Cooperative Apex body (Tanzania Tobacco Cooperative Apex – TTCA);

Tobacco production trend for the past ten years shows that there was an increase in production from 34,000 tons produced in the financial year 2003/04 to 126,600tons produced during the financial year 2011/12.

Views on the Potential of Smallholder Farming

Smallholder commercialization is a crucial feature of the structural transformation process considered by most development economists to be the major pathway from a semi-subsistence agrarian society to a more diversified and food secure economy with higher general living standards. Johnston and Kilby (1975) and Mellor (1976) first documented the structural transformation process in the regions of Asia where the Green Revolution later bloomed. Structural transformation process starts with broad-based agricultural growth, causing a build-up of purchasing power by millions of small farmers. These millions of farmers subsequently re-spend and re-cycle more money through the economy, fuelling demand and employment growth in non-farm sectors, which in turn increases the demand for food and other farm products in

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[2] Tanzania Tobacco Board (TTB) website: http://www.tobaccoboard.or.tz/production-arrangement

a virtuous cycle in which the rural and urban labour force provide a market for each other. Over time, broad-based income growth causes the share of food in overall consumption to fall, leaving increased disposable income to fuel the development of non-farm sectors.

As the demand for non-farm goods and services rise, labour force responds by shifting gradually from the farm to non-farm sectors, the demand for education and job skills rise, and the economy becomes increasingly diversified and urban. Family sizes decline as migration off the farm reduces the need for farm labour. Farmers are "pulled" off the farm into viable non-farm activities, not "pushed" off the farm into low-paying desperation jobs in the towns due to the inability of local agriculture to provide a reasonable standard of living. The main starting point of structural transformation is broad based smallholder-led agricultural growth and commercialization (Johnston and Kilby (1975) and Mellor (1976)).

The perceived role of agriculture in growth and development has changed considerably over the last half-century. Building on the dual economy model, early theorists viewed economic development as a growth process requiring the reallocation of factors of production from a backward, low-productivity agricultural sector to a modern industrial sector with higher productivity and increasing returns (Lewis, 1954). As a traditional sector, agriculture was seen to contribute passively to development by providing labour and food to the industrialization process. However, this view was swept aside by the dynamism of the Green Revolution in Asia during the late 1960s and early 1970s. The possibility of transforming traditional agriculture into a modern sector demonstrated agriculture's

potential as a growth sector and its active role in initiating broader development (Adelman, 2001).

While the importance of linkages between agriculture and non-agriculture indriving the growth process had long been recognized (Hirschman, 1958; Johnston & Mellor, 1961), post-Green Revolution theorists emphasized the role of agriculture in rural development (Haggblade, Hammer, & Hazell, 1991; Haggblade, Hazell, & Brown, 1989; Hazell & Haggblade, 1991; Hazell & Roell, 1983). The positive impact of agricultural growth on rural development was found to be strongest in countries where small farms dominated agriculture (Rosegrant & Hazell, 2000). Therefore, given widespread rural poverty and small-scale farming in Africa, the "conventional wisdom" supports a strong role for agriculture in African development.

Today, there is a growing debate over whether traditional development theories still apply, and accordingly, whether agriculture can contribute significantly to growth in sub-Saharan Africa. Agriculture's proponents suggest that, in any African country, only the agricultural sector has sufficient scale and growth-linkages to significantly influence aggregate growth. Moreover, to significantly reduce poverty, it will be necessary to promote "shared growth" (Birdsall, Ross, & Sabot, 1995) and substantially raise incomes for a majority of Africa's population. Achieving such growth will have to involve a large sector like agriculture, which accounts for one-third of Gross Domestic Product(GDP) for the subcontinent as a whole, and an even larger share for two-thirds of African countries. Proponents also suggest that agriculture's poor performance reflects inadequate investment and policies that are historically biased against the agricultural sector (Fan,

Zhang, & Rao, 2004; Schiff & Valdez, 1992; Timmer, 2005).

They emphasize the large gains from investing in rural infrastructure and agricultural technology, and the growth potential from catching up to the productivity levels of other developing countries. Finally, proponents of agriculture suggest that there are few viable alternatives to agriculture, especially given many African countries' small and poorly performing industrial sectors. During 1990–2004, African industry, including mining and mineral-based manufacturing, grew at 1.9% per year compared to 2.5% for agriculture (World Bank, 2006). Africa also faces increasing competition from large emerging economies like China and India, which may undermine attempts to develop labour-intensive manufacturing sectors.

By contrast, those sceptical of agriculture doubt whether agriculture can successfully generate sufficient growth in Africa today. This doubt reflects the poor performance of agriculture, weak institutions for rural development, and worsening agro-ecological conditions in many African countries (see, e.g., Collier, 2002; Ellis, 2005; Maxwell & Slater, 2003). The large size of the agricultural sector may be indicative of Africa's failure to develop, especially since past experience predicts a significant decline in the importance of agriculture over time in successfully developing countries (Collier, 2002). Agriculture's sceptics also suggest that while the sector's strong growth-linkages proved very effective during Asia's Green Revolution, they may be much weaker today in a more integrated global environment and with falling world food prices (Hart, 1998). Food prices are determined more by border prices than domestic supply when imports can enter freely, which reduces the need to invest in

domestic agriculture to maintain urban food prices and real wages and hence industrial competitiveness.

Under these emerging conditions, it is difficult for agriculture to generate economy-wide growth and facilitate the economic transformation predicted by theory or witnessed in the past successes of other developing countries. Agriculture's skeptics therefore tend to be more optimistic of African industry, suggesting that mining and manufacturing may offer viable alternative sources of growth. Despite contrasting opinions on the relative importance of agriculture and industry in generating overall growth, there should presumably be less contention surrounding the role of agriculture in poverty reduction, especially given the importance of agricultural incomes for Africa's poorest populations. However, even among agriculture's proponents, there are conflicting opinions over what should be the focus of an agricultural development strategy for low-income Africa (Dorward, Kydd, Morrison, & Urey, 2004). Some argue that the best opportunities for African farmers lie in high-value commodities and, given weak domestic demand in Africa, that production should focus on export markets. Small-scale farms are seen as unviable due to international competition and the growing complexity of supply-chains for both domestic and foreign markets (Reardon, Timmer, Barrett, & Berdegue, 2003). Rural populations should therefore focus on diversifying in comes away from agriculture (Ashley & Maxwell, 2001) and migrating to urban areas (Ellis & Harris, 2004). By contrast, others argue that rural income diversification has been a reality in Africa for decades (Barrett & Reardon, 2000; Reardon *et al.,* 2003) and has yet to generate significant income growth. Furthermore, income diversification is not an

unequivocally positive phenomenon, especially if diversification is driven by stagnant agricultural growth (Haggblade, Hazell, & Reardon, 2002) or if migration is due to growth in low-productivity urban activities (Lipton, 2004). Furthermore, while opportunities exist for improving traditional exports through better quality and niche markets, and while non-traditional exports are growing fast, the contribution of such growth to the overall economic growth is modest (Diao & Dorosh, 2007). The greatest market potential for most African farmers lies in domestic and regional markets for staples/food crops (Diao & Hazell, 2004; Rosegrant, Paisner, Meijer, & Witcover, 2001). With increasing commercialization and urbanization, future demand for these commodities will translate into market transactions and not just on-farm consumption.

Barker et al. (2004) concluded that most agricultural growth in the 1990s in Vietnam was due to increased irrigation and agricultural research. Their quantitative model, however, excluded measures of institutional change or restoration of markets. Minot & Goletti (2000) in Vietnamese agriculture found large effects on rural household welfare due to rice market liberalisation. Another study by Litchfield *et al.* (2003) in three developing countries noted that trade liberalisation caused a huge expansion of rural products intensive in the use of labour and a substantial decline in poverty, which their econometric analysis revealed to be most intense among households dependent on farming and unskilled labour. Ravallion and Vandewalle (2008) found a strong positive association between land law reforms and agricultural productivity growth. Che *et al.* (2006) also identified a strong contribution from institutional reforms to productivity growth.

Many studies have associated rural transformation to agricultural growth and productivity in the sense that once the high agricultural productivity is achieved, this would lead to rural poverty reduction. A survey of empirical studies finds rural non-farm income multipliers associated with agricultural growth in the range of 1.5–2.0 (FAO 1998). These numbers indicate that for every 1% increase in agricultural output, there is an associated additional 0.5%–1% increase in incomes and/or expenditures elsewhere in the rural economy. Over two-thirds of the additional expenditure is from increases in household consumption demand (Rosegrant and Hazell, 1999).

In conclusion, there is scant literature on complete assessment of individual crops' value-addition chain with regard to generic and specific factors that are needed to unlock potentials for advancing rural livelihoods. The main focus of the existing studies is on agriculture and growth by focusing on the macro variables. But each crop has its context in terms of the production conditions, technology involved, the communities involved, markets and the entire value chain. Viewed from this point, more empirical studies on value-addition chains in the agriculture sector are obviously needed.

Framework of Analysis and Methodology

Framework of Analysis

Adopting a focused and in-depth analysis approach, the study selected and focused on two crops and analysed each one's value chain completely based on selected indicators including availability of farm inputs, productivity, market access, agro-processing, profitability, reinvestment and consumption for household's wellbeing, among many others.

The study considered small holder producers to fall into three major categories by type of crop they are engaged in. The first category is farmers who produce solely for household consumption – commonly referred to as subsistence farming; the second category is farmers who produce for both own consumption (subsistence) and cash income; and the third is small holder farmers who produce solely for sale or cash. In each of these categories of farmers, the researchsought to identify unique features that define the given value chain and the geographical and community attributes that relate to rural livelihood advancement.

Arguably, the study asserts that in *each setting of small holder farmers* there exist rural livelihoods advancement deterministic factors that can be identified, enlisted and analysed and grouped as crop specific attributes, geographical attributes, individual or household specific attributes, community attributes, and institutional attributes. These groups of attributes constitute vectors of positive or negative factors that determine growth and rural livelihoods advancement. Their influence and impact on each of the stages of value-addition chain for any given crop constitute a deterministic matrix of factors for rural livelihoods advancement.

Crop Specific Attributes

Crop specific attributes entail type (choice) of crop, geographical, production and marketing features that explain the performance of a particular crop/economy of households and communities engaged in production of the crop. It is asserted that each type of crop faces a particular environment in terms of productivity and production-enhancing factors, value addition chain, marketing and profitability. Each of these group of factors constitutes a particular livelihood-advancement deterministic vector.

Geographical Attributes

Geographical attributes include location, weather or climatic conditions, soils and landscape and water bodies. These factors influence crop production irrespective of some of the other factors. They either work to the advantage or disadvantage of the farmers, and even lead to additional costs in some cases. Their impacts vary from one crop to another so that they have a deterministic impact on the process of rural livelihood advancement. However, these are purely natural factors, in which case there will be very little in terms of policy advocacy and scaling up or replication. In essence, they are naturally-enabling factors, or natural endowments.

Individual or Household Specific Attributes

Individual or household specific attributes entail a vector of deterministic variables which influence decisions and participation in agribusiness undertakings. These include decisions on type of farming activities to be carried out, participation and scale of such activities, timing, technologies to be used, labour inputs, financing and other farm inputs. Then once harvested, decisions have to be made on how much to sell and to whom and at what time to do it; storage and associated technologies, whether to process or not and the available technologies – where applicable; then packaging options where applicable and marketing options and profitability thereof. The decision variables in this context are therefore technological or individual or household specific. The major issue is how these decisions are made in the context of options are available around farming technologies, costs, value addition, marketing and profitability. Given the available options at every stage, are farmers' decisions the best contextually? What would

be optimal decisions if not? How would this work with regard to backward and forward leakages at every stage of decision? How would this work to enable the respective households and communities advance their livelihoods towards achieving the national strategic short and long term plans?

Community Attributes

Community attributes constitute attitudes towards, for example, farming activities and choice of a particular crop, marketing, savings, financial credit, personal and community development in general, etc. Other community attributes include religious beliefs, cultural dimensions and social capital in the context of relationships and trust. Each of these factors is more-or-less community specific; they affect decisions and performance in agribusiness. How does this happen for each crop and the respective community, at every stage of agribusiness and at what impact? How then the negatives could be scaled down if not eliminated, and the positives be scaled up?

Institutional Attributes

The last but most important vector is institutional attributes. These include agribusiness support services i.e. extension services, supply of farm inputs, market and value addition development services, warehouse services, financial services, study tours, field-farm schools, infrastructural networks; cooperatives, and complimentary services like education, health services and irrigation schemes. The services are in most cases provided by the public sector with the objective of enhancing the performance of the agriculture sector. As such, broad issues of *governance, coordination, regulation and control* are crosscutting in each of institutional attributes affecting rural development. The current study examines

how each of these institutions and services are currently working to serve small holder farmers in the specific crop they are engaged in the first place; and in the second place, whether there is best way of serving those farmers for improved value chains in the agriculture sector potentially of leading to rural advancement benchmarked from the national goals and targets on rural development and social wellbeing. Obviously, institutional factors ought to be catalysts for rural development by impacting on the other three categories of attributes – i.e. crop specific attributes, individual or household specific attributes and community attributes.

Selection of Crops and Study Sites

Analysis of issues raised in this study required in-depth rather than just extensive research process. Thus, the focus was purposefully on just two crops as a starting point for strategic in-depth analysis of crop value-addition chainsphase-by-phase as resources permit.

Therefore, one pure cash crop and one which is for both cash and food have been selected to include tobacco and paddy, respectively. The cash crop economy for small holders was selected in order to bring out issues of rural livelihoods advancement where production is purely for sale or cash incomes – that is to say somehow complete agribusiness markets exist. On the contrary, crops produced for both cash and food have incomplete markets because of the subsistence elements in labour and consumption. The process of rural advancement and institutions surrounding are different. And so with pure subsistence farming which is not part of this current study.

Since there are several pure cash crops

produced in several regions and districts in Tanzania, each of them would actually need to undergo the same analysis. However, as a starting point, we purposefully select to study tobacco-cultivating communities in Urambo in Tabora region. Two tobacco-cultivating villages were selected from Urambo District Council to include the best and worst performing villages, defined by tobacco yield per acreage.

Likewise, paddy production was purposely selected as a mixed crop for cash and food. It is noted that there are many paddy schemes in Tanzania, almost in every region, some of which have existed for many years while others are relatively new. The studychose to focus on a mature scheme for more vivid empirical results and one where sufficient number of farmers would be available for in-depth analysis. Accordingly, lower Moshi Paddy Irrigation Scheme was selected, given that it was established more than twenty years ago, and it is a transformation from local maize and traditional paddy production to relatively improved paddy production. The same approach of selecting two villages from the scheme by including best and worst performing villages was applied.

Data Collection and Analysis

Based on a full cycle value-addition chain analysis, comprehensive data collection instruments were prepared to capture information on crop-specific, geographical, individual/household specific, community and institutional *attributes*(Appendix 1).

The questionnaires were administered to five levels of respondents as summarized in Table 3-1. The first step of data analysis was to assign scores on the responses in the survey questionnaire. These were zero or one for binary or discrete responses, and scores of between zero and one for

continuous or non-discrete responses. For example, 'yes' or 'no' is coded '1' or '0' accordingly. Other responses have '1' or '0.5' or '0.25' or '0'; and so forth. Where necessary, recoding of some of the responses was carried out to ensure conformity with the scoring approach adopted. Analysis of the data involved computation of average scores for each issue or survey question by the individual respondents in the first place; then scores by the different categories of respondents, and aggregated averages by all the categories of respondents by function or level of authority or response. Table 3 1. Where applicable, triangulation method was used in the data collection and analysis of the survey data – both qualitative and quantitative data. Triangulation method involves asking more-or-less same questions to different respondents at different levels authority or stratification. The approach involves compilation of a weighted average scores from multiple independent sources of information on each of the study issues in order to increase the validity and reliability of survey results.

The first step of data analysis was to assign scores on the responses in the survey questionnaire. These were zero or one for binary or discrete responses, and scores of between zero and one for continuous or non-discrete responses. For example, 'yes' or 'no' is coded '1' or '0' accordingly. Other responses have '1' or '0.5' or '0.25' or '0'; and so forth. Where necessary, recoding of some of the responses was carried out to ensure conformity with the scoring approach adopted. Analysis of the data involved computation of average scores for each issue or survey question by the individual respondents in the first place; then scores by the different categories of respondents, and aggregated averages by all the categories of respondents by function or level of authority or response.

The results of the aggregated weighted average scores are assessed as 'poor', 'low', 'moderate', or 'high' for scores between '0 – 0.25'; '0.26 – 0.49'; '0.50 – 0.69'; or '0.70 – 1.00'; respectively. The scores are actually sub indicators specific for each study question. Aggregated average score for a set of questions or sub indicators gives an indicator or average score for a given issue under assessment. The magnitude of this indicator gives the level of performance or achievement on each specified issue under assessment. Several issues or indicators put together give a factor; which, for example, defines or explains availability of markets and market related services. The factors are finally aggregated to give the overall scores of each of the two chosen crops for the set of the assed issues.

Needless to mention here that several other arithmetic analyses have been done depending on the issue in question. These are many, but examples include costs of production storage, transport profitability, etc.

Findings and Discussion

Presentation and discussion of the findings of the study is arranged in four stages in order to effectively respond to the four basic questions of the study. First, an analysis of general factors/issues that are normally expected to influence successful crop production is undertaken. This helps to suggest which areas of interventions Tanzania has been successful and areas that still require further attention in each of the two value addition chains assessed. Second isa comparative value-chain cost analysis of each of the two crops with a focus on the relative magnitudes of costs of production, processing for storage, transport and storage. This serves to highlight cost areas that burden the overall viability of cultivation of the two crops. Third, correlational analysis

of the value added at each stage of rice farming that is production, wholesale and retail selling vis-à-vis profit earned at each stage. This establishes whether farmers realise a profit that is commensurate with value added by his/her production operations. However, for tobacco retail selling does not apply since the stages of whole selling and retailing are not applicable under the contract farming arrangement. In this case, only the profit earned by the farmer is assessed. Fourth, the findings that directly answer the question – 'can small holder farming advance rural livelihoods in Tanzania' are discussed based on findings of the structure of value chain costs and profitability and incidence of the same in each crop. This includes issues community preferences, re-investment in agriculture and translation of financial gains into improved wellbeing.

Analysis of Deterministic Factors for Crop Performance

Profile of Smallholder Farmers

An overview profile of smallholder farmers in the two study areas is presented in terms of education of farmers, years of involvement in crop cultivation and land ownership in average acreage of cultivated land.

Education of Famers

Apparently, majority of farmers (84.4%) involved in tobacco and rice cultivation have primary or lower education (Table 4.1). Only about 13.6%, 0.7% and 1.4% of the farmers have secondary, college and university education, respectively. Thus, the 'educated' are not involved in agriculture. Investment in education is not really translating into improved crop cultivation because of low participation of graduates in farming activities. This is a structural

problem given the increasing demand for application of modern technologies, skills and agro-business methods.

Years of Involvement in Crop Cultivation

The survey shows that many farmers have been involved in crop cultivation for many years but with minimum improvement in their livelihoods (poverty status) as indicated later in this study(Table 4.2). For instance, about 56% of the farmers surveyed indicated that they have been involved in their respective crop production for more than ten years.

Land Ownership

The findings (Table 4.3)   indicate that most farmers ownat least one acre of land. Tobacco farmers have more land compared to rice farmers; largely because rice needs very wet land, which is expensive to create through irrigation.

Average Acreage of Cultivated Land

Table 4.4 analyses the average acreage of cultivated land for tobacco and rice/paddy production. Generally, tobacco farmers have more acreage per household under cultivation than paddy/rice farmers –of course irrigation is a critical constraining factor in paddy production compared to tobacco.

Analysis of Success Factors for Agricultural Production

Guided by a review of the extant literature (ACTESA (2011), ADB (2006), Goletti (2005), URT (2012), Zewdu, G. & Malek, M. (2010)),the study posited *inter alia* that successful smallholder farming is dependent on a number of deterministic factors ranging from production related services, markets

and marketing-related services, community and individual characteristics, etc. The study assesses prevalence of each of these factors in tobacco and paddy production. The approach here is to create performance scores along the value addition chain for each factor from aggregation of scores on indicators and sub indicators of performance for each crop at farmers' level, village level, ward, district and national level. Table 4 5presents overall results based on success factors while Table 4 6, Table 4 7 and Table 4 8present details for each of the success factors based on its constituent indicators and sub-indicators as appropriate.

Overall Performance Scores of Tobacco and Rice

The overall performance scores from all deterministic factors as presented in Table 4 5are 0.672 and 0.571 for tobacco and rice/paddy, respectively;out of maximum possible score of one.The scores show the overall functioning and effectiveness of all institutions including indicators and sub indicators of performance along the entire value addition chain of each of the two crops. These results indicate a better overall performance for tobacco as compared to rice. Decomposing the aggregate scores into major deterministic factors, as shown further in Table 4 5, major differences between tobacco and rice are observed. Again, tobacco scores are much better than those of rice except for production and related services.

The weakest factor for rice is markets and market-related services in which performance does not exceed 35%. This implies that production of rice is relatively much better organized than that of tobacco; but marketing services for rice are obviously poor and less efficient that marketing services for tobacco. The finding show areas

of focus for planned intervention in any of the two crops. But more interesting in this analysis is to bring out details of the weak areas within each of the major deterministic factors for specific actions as presented next. Availability and utilization of production-related services and technology

Detailed analysis of the assessment of the availability and utilization of production-related services is depicted inTable 4 6. As already alluded to, the overall score for this indicator is0.672for tobacco.The details of production-related services as indicators and sub-indicators including their scores from the survey are presented in Table 4 6. Areas with relatively high performance scores for tobacco are availability and use of fertilizers, availability and use of seeds/seedlings, availability of pesticides, availability of casual labourers, and availability of extension officers.These are actually the measures that have been widely advocated for by the Government and other stakeholders. But the findings also point to weak areas whose performance is rather low and/or poor. These are application of various production technologies used for farm preparation, planting and other activities and application of irrigation systems.

Assessment of rice/paddy in terms of availability and utilization of production-related services has a performance score of 0.794 as indicated earlier and further in Table 4 6.The score is relatively higher and better than that of tobacco. The detailed areas of the source of good performance are application of production technologies (0.812), application of fertilizers (0.995), availability and use of seeds/seedlings (0.986), availability and use of pesticides (1.00), availability of modern irrigation systems (0.995) and availability of casual labourers (0.783). The indicators with poor

or low performance are availability of extension services (0.455) and farmers training (0.326).

Availability of Markets and Marketing-Related Services

Detailed results on availability of markets and marketing-related services are presented in Table 4 7. Indicators with good scores for tobacco are marketing services (0.752), especially in terms of availability of a reliable market and availability of market sheds in villages; and cooperatives (0.739), particularly in relation to the existence of functional cooperatives in the localities. The low performing indicatoris infrastructure (0.394) especially in connection with the availability of reliable/tarmacked roads. Concerns on low prices for both tobacco and rice are generic, most farmers feel that they are not getting a good price for their crop yields; and it more serious with rice farmers.

The overall score for availability of markets and marketing-related services for rice is too low at 0.342. This performance is down as a result of the generally poor performance of cooperatives (with a score of0.251) whose sub-indicators (i.e. availability of cooperatives, whether the cooperatives are helping farmers and performance of the District Agricultural support team) are either low or poor. Also, in terms of infrastructure for facilitating marketing, the score is rather low at 0.326. Its sub-indicators of whether roads are passable throughout the year and whether the respective areas are connected by tarmac road have low scores also. Yet another challenge is marketing whose indicator has a low score of 0.450, pulled down by the poor performance of the sub-indicator on existence of good market price for rice and the moderate performance of the sub-indicators of availability of reliable market and market sheds in the villages.

Clearly, these results indicate that although both crops should continue to receive attention in terms of improving markets and marketing-related services, rice faces challenges with regard to markets and marketing services. For each crop, the interventions to promote and enhance markets and marketing should in general focus on the indicators and sub-indicators that have recorded poor and low scores as a matter of priority.

Community Attitudes and Individual Attributes affecting Production

Community attitudes and individual attributesaffecting crop production are critical factors that have tremendous impact on rural livelihoods through agriculture. The assessment of these attitudes for each of the two crops is summarised inTable 4 8. The overall results show moderate scores of 0.696 (tobacco) and 0.636(rice) with regard to attitudes and individual attributes affecting crop production.

For tobacco, indicators and sub-indicators which have recorded poor and low scores are the extent to which communities understand and appreciate the role of loans from banks and SACCOS (0.472), education of the farmer (0.282), and cultural attributes affecting crop production (0.415).

With regard to rice, low performance scores are recorded in the following areas: whether land is plenty for paddy production in the area (0.341), cultural attributes that affect crop production (0.415),role of loans from banks and SACCOS (0.529) and the belief on whether farming of paddy is profitable enough (0.418).

In conclusion, the study has identified the glaringly weak and strong factors, indicators and sub-indicators of performance for each of the two value chains (crops). And in general, these findings have marked differences between the two value chains (crops) implying a need for crop and context specific approaches as we grapple with the challenge of advancing rural livelihoods through agriculture. Indeed this is the contingency or situational approach, which recognizes that farming systems are inter-related with their environment and that different environments and crops mostly likely require different strategies for enhancing crop production.[3]

Value-addition Chain Analysis

Value-addition chain analysis has been undertaken for each of the two study crops to establish the nature of production, processing for storage and sale and marketing costs and highlight problematic cost and profits drivers at each stage. The costs are analysed per acre of farmland by computing in monetary value all inputs for producing and marketing a given amount of the crops. Knowing production, processing for storage and sale and marketing costs is a prerequisite for determining how well small-holder farming business is doing: the difference between the value of yield per acre and inputs or net returns to farmers. It enables evaluation of how efficiently resources are being used, to predict how farm incomes in agribusiness, along value addition chains, will respond to specific policy or other farm-income enhancing initiatives.

Analysis of Production, Processing, Storage and Sale Costs

Table 4 9 and Figure 4 1 provide analysis of costs along the entire value-addition chain

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[3]Organizational theories - Food and Agriculture ...www.fao.org/docrep/w7503e/w7503e03.htm

for tobacco. It is found that average total costs of production per acre is TZS1, 137, 587.46 with details provided in the table. The average cost of processing for storage and sale is 139,189.44 TZS; which gives total costs of TZS1, 276, 776.90 for production, processing, storage and marketing. Apparently, activities with relative high costs are labour (57%), buying fertilizers (17%) and irrigation (10%). The most critical (expensive) cost item is labour. Clearly, there is need to increase labour productivity by promoting many labour saving innovations for smallholder farmers, in tandem with promotion of expansion of agricultural activities and complementary non-farm income generating activities to

absorb any labour release from the use of labour saving technologies.

Marketing Costs for Rice

Analysis of marketing costs has been done only for rice (Table 4 11) since tobacco farmers have all their produce bought under contract farming arrangements. The analysis has focused on wholesale and retail trading in Dar es Salaam for illustrative purposes. Noteworthy is that on costs per output from one acre of land; wholesalers and retailers incur TZS288,000 and TZS216, 000 respectively, which are 16% and 12% of the value added by the farmer of TZS1,081,616.51 as indicated earlier.

Table.3 1 Respondents by Type and Level of Interviews

Level of Respondents	Respondents interviewed
Farmers' Level	1. Individual Farmers 2. Farmers Groups 3. Individual Processor in Value Added 4. Processing Agribusiness Groups
Village Level Respondents	5. VEO 6. Village Chairperson 7. Water/Energy Committee Chairperson 8. Chair or Secretary of the Village Agricultural Committee 9. Milling / Processing Machine Operator 10. Warehouse Operator 11. Market Manager /Authority 12. Crop dealers (Middlemen at Village Levels) 13. Transporters at the Village Point
Ward Level Respondents	14. Agricultural Extension Officer 15. Ward Market Authorities 16. Ward Warehouse Operator 17. Ward Processing Facility 18. ACCOS/SACAS/Community Bank
District Level Respondents	19. DALDO 20. District Training Coordinator 21. DMEO 22. District Cooperative Officer 23. District Planning Officer
National Level Respondents	24. Crop Specialists at the Ministry of Agriculture (Tobacco) 25. Crop Specialist at the Ministry of Agriculture (Rice)

Table4 1 Categories of Respondents Farmers by Level of Education

Level of Education	Type of Crop		Total
	Tobacco	Rice/ Paddy	
Did not attend Formal School	16.9%	4.3%	10.7%
Primary	70.4%	76.8%	73.6%
Secondary	11.3%	15.9%	13.6%
College		1.4%	0.7%
Graduates	1.4%	1.4%	1.4%
	100%	100%	100%

Table.4 2 Respondents by Years of Involvement in the Respective Crop

Years of Involvement in the Crop Cultivation	Type of Crop		Total
	Tobacco	Rice/ Paddy	
Not more than five years	28.3%	12.9%	21.2%
Between six and 10 years	20.2%	25.9%	22.8%
More than ten years	51.5%	61.2%	56.0%
Total	100%	100%	100%

Table.4 3 Land Ownership by Size and Proportion of Respondents Owning Land

Land Size	% of Farmers Owning Land by Type of Crop		Total
	Tobacco	Rice/ Paddy	
One acre		18.8%	9.3%
Two acres	1.4%	33.3%	17.1%
Three Acres	7.0%	13.0%	10.0%
Four acres	4.2%	2.9%	3.6%
Five acres	4.2%	1.4%	2.9%
Between six and ten acres	83.1%	30.4%	57.1%
Total	100%	100%	100%

Table4 4 Average Acreage of Land Cultivated Every Year by Farmers

Land size	Type of Crop and % of Farmers Involved		Total
	Tobacco	Rice/ Paddy	
One acre		29.0%	14.3%
Two acres	5.6%	40.6%	22.9%
Three Acres	8.5%	14.5%	11.4%
Four acres	18.3%	7.2%	12.9%
Five acres	14.1%	1.4%	7.9%
Between six and ten acres	53.5%	7.2%	30.7%
	100%	100%	100%

Table.4 5 Overall Score of Tobacco and Paddy

Factor		Factors Score	
		Tobacco	Rice/Paddy
1	Production and related services	0.692	0.794
2	Markets and Marketing-related services	0.628	0.342
3	Community and individual attitudes towards production of Tobacco/Rice	0.696	0.636
	Overall score	**0.672**	**0.591**

Table.4 6 Availability and Utilization of Production-Related Services

	Sub indicators and Indicators	Scores on sub indicators by type of crop		Scores on indicators by type of crop	
		TOBACCO	**RICE**	**TOBACCO**	**RICE**
1.0	**Indicator 1:Technologies**				
1.1	Types of production technology used to prepare farms and planting	0.092	0.812		
	Overall Technologies			**0.092**	**0.812**
2.0	**Indicator 2: Fertilizers**				
2.1	Use of fertilizer's	0.993	1.00		
2.2	Availability of fertilizers	0.958	1.00		
2.3	Availability of all types fertilizers needed	0.958	0.986		
	Overall Fertilizers			**0.969**	**0.995**
3.0	**Indicator 3: Seeds/seedlings**				
3.1	Use of improved/modern seeds/seedlings	0.986	0.986		
3.2	Availability of modern seeds/seedlings	1.00	0.986		
	Overall Seeds/seedlings			**0.993**	**0.986**
4	**Indicator 4 Pesticides**				
4.1	Availability of pesticides	0.986	1.00		
	Overall Pesticides			**0.986**	**1.00**
5.0	**Indicator 5 Irrigation**				
5.1	Need for irrigation	0.923	1.00		
5.2	Access for irrigation	0.169	1.00		
5.3	Availability of modern irrigation	0.00	0.986		
	Overall Irrigation			**0.366**	**0.955**
6.0	**Indicator 6 Casual Labourers**				
6.1	Availability of casual labourers	0.738	0.855		
6.2	Are they expensive	0.707	0.710		
	Overall Casual Labourers			**0.721**	**0.783**
7.0	**Indicator 7 Extension Services**				
7.1	Do you get Extension Services from Agricultural Officers	0.831	0.341		
7.2	Do Extension Officers offer good and effective services for your production?	0.778	0.327		
7.3	How often do Extension Officers visit your Farm?	0.731	0.328		
7.4	Do you have Village or Ward Agricultural Officer	0.901	0.654		
7.5	Is the extension Officer specifically trained in	0.789	0.627		

	Sub indicators and Indicators	Scores on sub indicators by type of crop		Scores on indicators by type of crop	
		TOBACCO	**RICE**	**TOBACCO**	**RICE**
	Tobacco / Paddy production?				
	Overall Extension services			**0.806**	**0.455**
8.0	**Indicator 8 Training**				
8.1	Have you ever received any training for production of this crop?	0.831	0.478		
8.2	Have you ever received any training on entrepreneurial skills in agribusiness?	0.268	0.235		
8.3	Do you have any 'Shamba Darasa' nearby for learning	0.704	0.265		
	Overall Training			**0.601**	**0.326**
	Overall score Availability and use of Production related services	**0.692**	**0.794**	**0.692**	**0.794**

Table.4 7 Availability of Markets and Marketing-related Services

	Sub indicators and Indicators	Scores of sub indicators by type of crop		Scores of indicators by type of crop	
		TOBACCO	**RICE**	**TOBACCO**	**RICE**
1.0	**Indicator 1 Marketing**				
1.1	Availability of reliable market	0.986	0.536		
1.2	Availability of a market shed in the village	1.00	0.652		
1.3	Is the market price good for your crop?	0.271	0.162		
	Overall Marketing			**0.752**	**0.450**
2.0	**Indicator 2 Infrastructure**				
2.1	Are roads passable throughout the year in this area?	0.747	0.652		
2.2	Are you connected to tarmacked road in this area?	0.042	0.00		
	Overall Infrastructure			**0.394**	**0.326**
3.0	**Indicator 3 Cooperatives**				
3.1	Do you have Cooperative Society in this area /District?	0.971	0.265		
3.2	How is the Cooperative Society mentioned in V_B_2a helping farmers?	0.739	0.278		
3.3	How do you assess the performance of the District Agricultural support team?	0.507	0.210		
	Overall Cooperatives			**0.739**	**0.251**
	Overall Score Markets and Marketing-related services			**0.628**	**0.342**

Table.4 8 Community and Individual Attitudes Towards Production of Tobacco/Rice

|	Sub indicators and Indicators	Scores of sub indicators by type of crop		Scores of indicators by type of crop	
		TOBACCO	**RICE**	**TOBACCO**	**RICE**
1.0	**Indicator 1 Community Attitudes towards production of tobacco/rice**				
1.1	Do you think people in this village work hard to produce for their household?	0.845	0.985		
1.2	Is land plenty for Tobacco / Paddy production in this area?	0.824	0.341		
1.3	Do cultural issues affect production in this area ?(Indicating not affecting)	0.585	0.919		
1.4	How does the Community think of people who take loans from Banks and SACCOS?	0.472	0.529		
1.5	Is the farming considered a lucrative and respective activity in this area?	0.901	0.866		
1.6	Is the farming of Tobacco / Paddy profitable enough?	0.627	0.418		
	Overall Community Attitudes towards production of tobacco/rice			**0.709**	**0.676**
2.0	**Indicator 2 Individual attributes/attitudes towards production of tobacco/rice**				
2.1	Type of Farmer quasi cash versus cash	1.00	0.616		
2.2	Education of the farmer	0.282	0.339		
2.3	Years of involvement	0.765	0.830		
	Overall Individual attributes/attitudes towards production of tobacco/rice			**0.682**	**0.595**
	Overall ScoreCommunity and individual attitudes towards production of Tobacco/Rice			**0.696**	**0.636**

Figure.1 The Evolution of Rural Development Policies
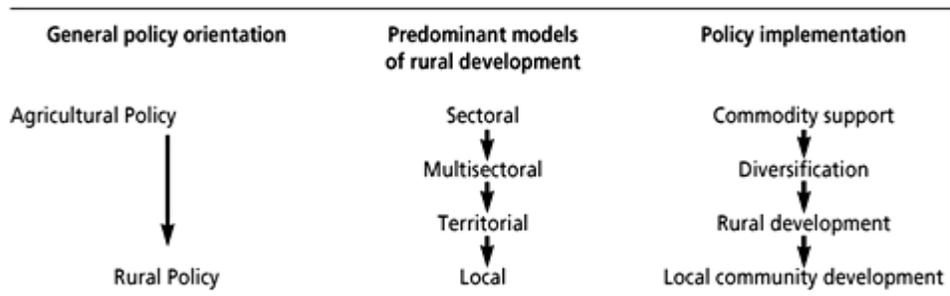
Table.4 9 Tobacco Production and Processing for Storage and Sale Costs (per one acre)

S/N	Major Activity	Activity details	Cost	
			TZS	Percent
1	Farm preparation	Land renting	50,323.94	4%
2	Planting	Buying seeds	107,323.94	9%
		Irrigating per acre	110,915.49	10%
6	Fertilizers	Buying fertilizers	217,312.68	19%
			485,876.05	43%
9	Labour cost	**Pesticides**	16,535.21	1%
		Farm preparation	83,863.65	7%
		Planting	29,426.14	3%
		Wedding	62,056.82	5%
		Kutifulia	36,931.82	3%
		Fertilizers	24,397.73	2%
		Kukata vikonyo	16,375.00	1%
		Harvesting	153,551.14	13%
		Storing/Handling	168,011.36	15%
		Grading before curing	60,562.56	5%
		Guarding	-	0%
		Furrow cleaning	-	0%
		Subtotal	**651,711.41**	57%
Total production costs			**1,137,587.46**	100%
PROCESSING FOR STORAGE AND SALE				
10	Processing for storage and sale	Cost of firewood	98,267.61	71%
		Cost of grading after curing	40,921.83	29%
Total processing for storage and sale costs			139,189.44	100%
Total Costs of Production and Processing for Storage and Sale: TZS 1,276,776.90				
S/N	*Major Activity*	*Activity details*	*Costs*	
			TZS	*Percentage*
1	Farm preparation	Land renting	261,250.00	24%
2	Planting	Buying seeds	64,312.50	6%
4	Irrigation	Irrigation	34,093.75	3%
5	Fertilizers	Buying fertilizers	100,000.00	9%
6	Pesticides	Buying pesticides	12,000.00	1%
		Subtotal fixed cost	**471,656.25**	44%
7	Labor cost	Pesticides	20,868.75	2%
		Farm preparation	124589.74	12%
		Planting	80192.31	7%
		Weeding	82532.05	7%
		Kutifulia	1730.77	0%
		Applying fertilizers	94576.92	9%
		Harvesting	117615.38	11%
		Drying	27351.28	3%
		Grading	13025.64	1%
		Guarding	65846.15	6%
		Cleaning irrigation trenches	2500.00	0%
		Subtotal labor cost	**609,960.26**	56%
		Total costs	**1,081,616.51**	**100%**

Table.4 10 Production Costs of Rice (per one acre)

S/N	Major Activity	Activity details	Costs	
			TZS	Percentage
1	Farm preparation	Land renting	261,250.00	24%
2	Planting	Buying seeds	64,312.50	6%
4	Irrigation	Irrigation	34,093.75	3%
5	Fertilizers	Buying fertilizers	100,000.00	9%
6	Pesticides	Buying pesticides	12,000.00	1%
		Subtotal fixed cost	**471,656.25**	44%
7	Labor cost	Pesticides	20,868.75	2%
		Farm preparation	124589.74	12%
		Planting	80192.31	7%
		Weeding	82532.05	7%
		Kutifulia	1730.77	0%
		Applying fertilizers	94576.92	9%
		Harvesting	117615.38	11%
		Drying	27351.28	3%
		Grading	13025.64	1%
		Guarding	65846.15	6%
		Cleaning irrigation trenches	2500.00	0%
		Subtotal labor cost **609,960.26**		56%
		Total costs	**1,081,616.51**	**100%**

Table.4 11 Marketing Costs for Rice (output of one acre of land)

Wholesale Trading in Major Cities (Dar es Salaam)						
S/N	Description		Unit Cost in TZS	Number of rice bags produced from one acre of land	Total cost per acre	
					TZS	%
1	Transport to Dar (one bag or 100kgs of rice)		10, 000	18	180,000	62.5
2	Handling cost	Storage	3,000	18	54,000	18.75
		Labour cost	3,000	18	54,000	18.75
Total			**16,000**	18	**288,000**	100
Retail Trading in Major Cities (Dar es Salaam)						
	Description		Unit Cost in TZS	Number of rice bags produced from one acre of land	Total cost per acre	
					TZS	%
1	Transport from wholesale store to retail shop		6,000	18	108,000	50
2	Handling cost	Storage	3,000	18	54,000	25
		Labour cost	3,000	18	54,000	25
Total			**12,000**		**216,000**	100

Table.4 12 Value Addition and Profit Sharing from One Acre Production of Rice Traded in Major Cities

S/N	Major Services Performed	Detailed Services Performed	Value Added		Profits Sharing	
			TZS	Percentage	TZS	Percentage
1	**Production (Farmer)**	*Production*	*1,081,616.51*	68%	358,383.49	32%
2	**Wholesale Trading in Major Cities**	Transport	180,000	11%	432,000	39%
		Storage and Handling	108,000	7%		
		Subtotal wholesale	*288,000*	18%		
3	**Retail Trading in Major Cities**	Transport	108,000	7%	324,000.00	29%
		Storage and Handling	108,000	7%		
		Subtotal retail	*216,000*	14%		

Table.4 13 Value Addition and Profit-Sharing from One Acre Production of Rice Traded in Regional (Local) Market

S/N	Major Services Performed	Detailed Services Performed	Value Added		Profits Sharing	
			TZS	Percentage	TZS	Percentage
1	**Production (Farmer)**	*Production*	*1,081,616.51*	*90%*	158,383.49	40%
3	**Retail Trading in Local Markets**	Transport	120,000.00	10%	240,000.00	60%
		Storage and Handling				

Table.4 15 Tobacco Cultivation Profitability

Point of selling	Selling price/unit	Average unit produced	Total sells	Production Cost	Profit
Farm get price	154,043.66	22.45	3,458,280.17	1,276,776.9	2,181,503.27

Table.4 16 A Simplified Farmer Budget

	Rice Profit/Expenditure	Tobacco Profit/Expenditure
Profit/acre	158,383.49	2,181,503.2
Seasons	1	1
Average household farm size under cultivation	2 acres	3 acres
Average household size (HBS, 2011/12)	5	5
Profit per household/per year	**315,879**	**6,544,509.8**
Profit/person/month	**5,279.45**	**109,075.15**
Basic Needs Poverty Line value per month (HBS, 2011/12)	36,482[4]	36,482
Expenditure for 5 adult equivalent household members @ 36,482 per month	182,410	182,410
School expenditure per month (assume 2 family members in primary)[5]	20,000	20,000
School expenditure per month (assume one family member in secondary)[6]	25,000	25,000
Total Household Expenditure per month	**227,410**	**227,410**
Household expenditure/person/month	**45,400**	**45,400**
Net saving per person/month	**(40,120.55)**	**136,391.94**

Table.4 17 Household Expenditures by Incomes from Farming

S/N	Type of Expenditure	Percentage of Farmers Indicating Expenditure by Type of Crop	
		Tobacco	Paddy/Rice
1	Building/Renovating a House	41.04	15.21
2	Paying school fees	17.62	29.79
3	Paying for health care	1.13	2.79
4	Marriage	0.23	1.03
5	Household expenses (food, etc.)	21.53	7.19
6	Starting/Expanding business	2.77	37.68
7	Reinvestment in farming (purchase of modern farming equipment)	3.36	3.6
8	Purchase of bicycles	0.18	0
9	Other expenses	15.38	2.74

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[4] Per month/person is TZS 36,482/=
[5] Assumed at TZS 120,000/= per year
[6] Assumed at TZS 300,000/= per year

Figure.4 1 Production Costs of Tobacco per Acre
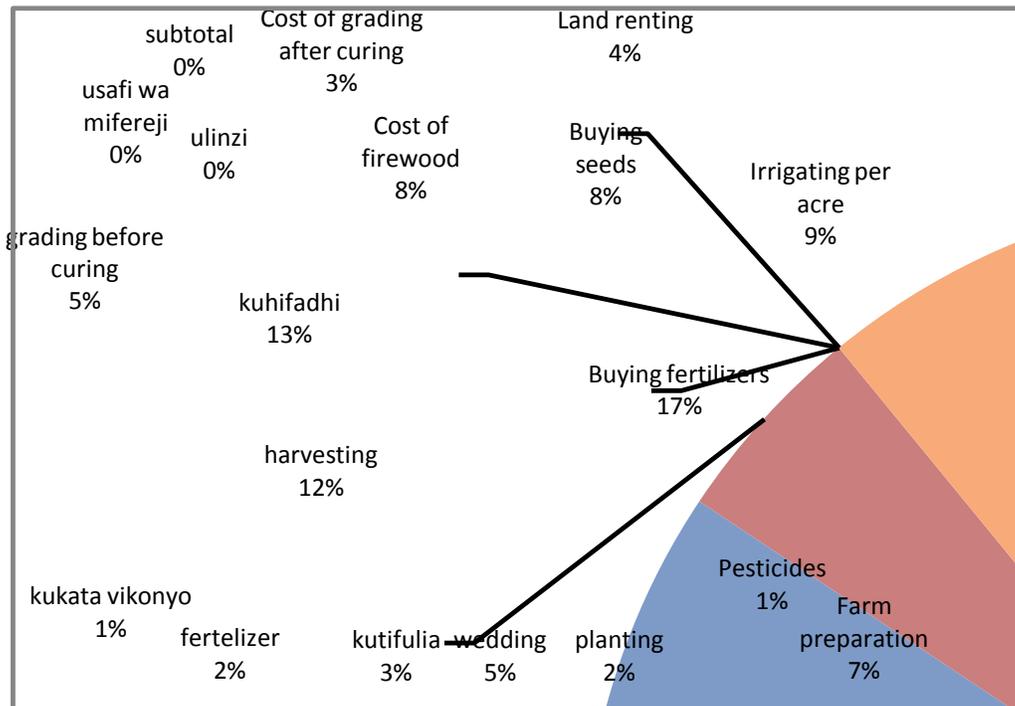
Figure.4 2 Rice Production Costs Per Acre
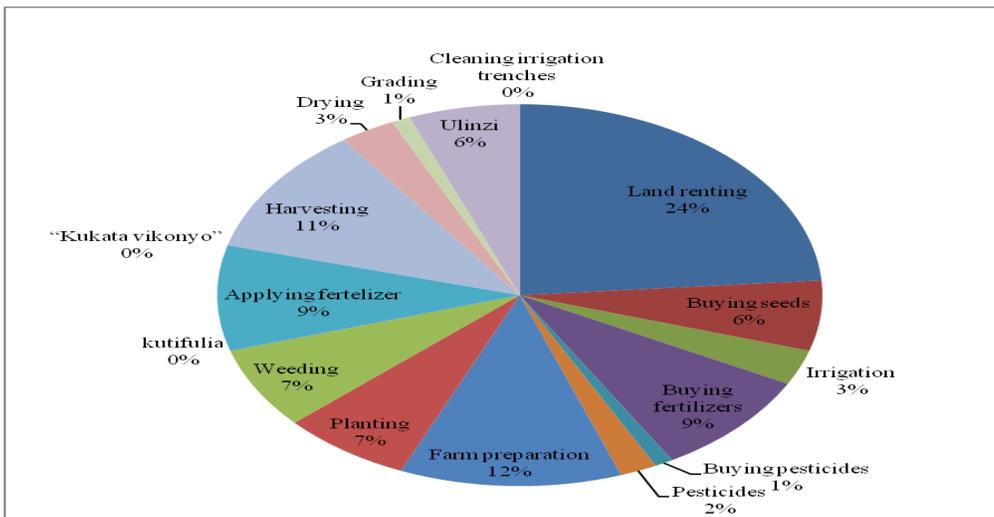
Analysis of Value Addition, Profitability and Profit Sharing

Value added at various stages of rice production, wholesaling and retailing involves costs and profits. Analysis of value added and profit sharing at various stages of rice production and marketing in major cities (Dar es Salaam) and local markets is analysed in Table 4 12 and local markets in Table 4 13, respectively. The objective is to determine whether farmers get a fair share of the profit generated compared to the relative value added to the process. The results indicate that while farmers/producers contribute a much higher share of the total value added(about 68%) than the whole sellers (18%) and retailers (14%), the proportion of profits share earned is considerably much smaller for farmers (32-40%).Thus, urban players in the value-addition chain – wholesalers and retailers have their proportionate share of profits (60-68%) bigger than the value they add on the chain of value addition for rice production and marketing. Lack of effective warehouse system and cooperative movement are the core determining factors of the observed results. Tobacco farmers in Urambo have contract farming, which makes it to market their produce. Therefore, analysis of the details of marketing costs for tobacco, as applied to rice, is complex. Nevertheless, analysis of profitability is provided in Table 0-1.

The analysis shows costs and profits per acre of TZS 1,276,776.9 and2,181,503.27, respectively, for tobacco production. This is a profit margin of 114% although farmers do not cost their managerial and other labour-related inputs emanating from the household, and thus exaggerating profits.

Can Smallholder Agriculture Transform Rural Livelihoods?

The analysis of value added and costs for tobacco and rice shows that both crops are profitable though the magnitude of profits vary significantly between the two crops. Tobacco is more profitable than rice; partly because paddy production uses much hired labor compared to tobacco production.

It is difficult to advance or transform rural livelihoods unless smallholder farmers make substantive profits and savings from their economic activities and reinvest profitably. This is the smallholder farmers' livelihood circle that should spark transformation. To determine savings and investment per household from farm earnings of the two crops, we make simple assumptions as follows: each household has an average of five members (as per the National Population and Housing Census (2012); each household has three school going children, two in primary school and one in secondary school; and average acreage cultivation of rice and tobacco is 2 and 3 acres for rice and tobacco, respectively, as computed from the survey data. Table 4 16shows estimated household profits and monthly budget for the two crops. The estimates show net monthly household's savings of TZS 136,391.94 for tobacco-growing farmers and negative household's savings of TZS40,120.55for paddy growers (Table 4.16). This is consistent to the earlier findings of this study that marketing services for rice are rather poor (with a score of 0.34 out of 1) while for tobacco is 0.63 which is substantially better than rice. Arguably, the results indicate that paddy farmers cannot depend on rice production alone; necessarily they also have other sources of income; and so with tobacco farmers, although not so pressing. Therefore, tobacco farmers are self-sufficient in food purchased by income earned from tobacco production. To the contrary, rice farmers are not; they need to involve themselves in other additional activities to complement income earned from paddy production.

Tobacco is a pure cash crop in which farmers earn income in addition to other parallel farming activities which earn them food, etc. Therefore, the estimated saving of TZS 136,391 per person per month or 1,636,692 per year for tobacco farmers is a conservative estimate; they definitely have more to spend beyond the basic needs basket as defined in the national household budget surveys.

Whether small holder farming can transform rural livelihoods or not is a matter of productivity, savings and how the savings translate into further profitable investments and wellbeing of the respective households. These are rural transformation-deterministic triplet factors which work together for a common end. Productivity will generate more to sell; increasing sales will generate more savings assuming that thriftiness prevails; with savings more productive investments and reinvestments are possible; and hence, the circle has the potential to regenerate with expansion. This is the gateway towards transformation of rural livelihoods. But this is either happening too slowly or not happening at all for some households/communities, why?

Definitely, without investment or reinvestment, there is no internal source of growth at the household level; the rate at which households invest determine everything else including productivity – this is the real challenge. Not all households are able to save solely from their respective farming activity, like the rice farmers discussed earlier, and not all who are saving are making prudent and economic investments. These are two different issues, anyway. In Table 4.17 analysis of the pattern of household expenditure from all incomes earned by a typical household for tobacco and rice is provided. More interesting result in the table is proportion of

household income invested in productive assets or activities and the composition of such investments for the two crops. Tobacco farmers spend mainly on building or renovating their houses. Investment in productive assets, outside education, is about 6.3% of the total annual income; reinvestment in farming is only 3.4%. This level of investment is undoubtedly too little for transforming rural livelihoods in the foreseeable future. Promisingly, investment in education (school fees) is more than 17% of household income for tobacco farmers, which points to a potentially better future.

Obviously paddy farmers have multiple sources of livelihood. The invest about 38% of their total income in business activities, 30% in education, 15.2% in housing; and only 3.6% is reinvested in rice production. With this pattern of investment, it is clear that development of paddy production is almost at a standstill; profits are low in addition to land problem, and reinvestment is therefore low. However, substantial proportion investment is going in to other activities including non-farm activities – an indication that new avenues of growth are being created in rural areas, though too slowly.

Conclusively, the pace at which the desired rural advancement can be achieved is the major constraint. Improvement in rural livelihoods is happening too slowly, and may take too many years,beyond the current National Development Vision 2015, to be realized. There is a need for design multiple interventions by analyzing the entire crop value addition chain for each crop, and beyond the chain, examine structural and attitudinal factors that determine reinvestment in farming and non-farming activities including the profits generated.

Conclusions, Emerging Issues and Policy Implications

Conclusion

The findings of this study show that the hitherto universalistic interventions and policy approach to rural advancement through agriculture will not be effective in attaining national objectives on the same because of the complexities and dynamics of smallholder farming communities. Universalistic approaches generally seek for prescriptions that cut across situations/areas and crops. The most efficacious approach and policy development would be a contingency and process approach that selects *to focus on a particular crop in a defined context and at a particular time;* and then performa thorough in-depth analysis of the entire value chain based on selected indicators. The value chain has to cover all the stages from mobilisation of resources and inputs, production, storage and transport, marketing, reinvestment of financial gains and even household expenditure patterns of the income earned.

The other implicit lesson from the study is revelation that although farmers and even policy makers, in most cases, feel they know what ought to be done, their actions are not normally the best owing to a glaring lack of adequate information on the situation and various options available to them when dealing with agribusiness activities.
The value chain cost analysis that was coupled with profit sharing assessment at various stages of the value chain (production by farmers, whole selling by third party agents and retail selling by end line business people) has shown rice farmers have the lion's share of value added in the business chain; but the profit they earn is proportionally much smaller compared to that earned by wholesalers and retailers. It is thus concluded that unlike previous studies

that have adopted the value chain analysis, the value chain cost assessment when used as part of value chain analysis leads to better insights especially when complemented by relational analysis of the costs, value added and profit shared at each stage.

The study has also used triangulation method to include in the value-addition chain analysis a comprehensive investigation of the various possible multitudes of success-determining factors ranging from crop specific attributes (production & marketing related), geographical attributes, individual/household specific attributes, community attributes and institutional attributes. With the use of the triangulation approach, it is readily possible to analyse and synthesise vast information collected on many quantitative and qualitative surveys involving various respondents to arrive at a set of *composite indices* that make it easy to interpret.

The study has shown that the pace at which the desired rural advancement can be achieved is precisely a major constraint in transforming livelihoods. Improvement in rural areas is happening too slowly, and may take too many years, beyond the current National Development Vision 2015, to be realized. There is a need of designing multiple interventions by analyzing the entire crop value-addition chain for each crop, and beyond the chain, examine structural and attitudinal factors that determine reinvestment in farming and non-farming activities including the profits generated.

And, finally, the study has really demonstrated potency of the value chain approach in advancing rural livelihoods through agriculture. Apparently, then, the ultimate objective should be what Purcell (2005) stated: improvement in incomes for

farm families and the development of agricultural commercialization through building and utilising networks of functional value addition chains.

Policy Implications

Strategic Research and Policy Approach to Rural Advancement through Agriculture

a. Future research and policy design for rural development should adopt a contingency based process approach that selects *to focus on a particular crop in a defined context and at a particular time* and then performs thoroughin-depth analysis of the complete value chain - from mobilisation of resources and inputs, production, storage and transport, marketing, reinvestment from financial gains, and household welfare.

b. The standard crop value analysis should be complemented by relational analysis of the costs, value added and profit shared at each stage.

c. The crop value chain analysis should include an assessment of success-determining factors ranging from crop specific attributes (production & marketing related), geographical attributes, individual/household specific attributes, community attributes and institutional attributes.

Promote the triangulation approach as a powerful and effective tool for analysis and synthesizing collected information on many and various attributes of a value chain into a few set of indices that are easier to interpret.

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