Assessing Participation in Agricultural Development Projects: A Case Study of the Mbalangwe Irrigation Scheme, Morogoro Rural District, Tanzania

THESIS

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By

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Abstract

Participation of smallholder farmers in development programs is highly advocated by international development agencies and governments, alike. In practice, however, little is known about the participation that occurs. This study focused on the Mbalangwe Irrigation Scheme [MIS] in Morogoro Rural District of Tanzania, which is implemented by the Agricultural Sector Development Program [ASDP] of the Government of the Republic of Tanzania. Local participation is viewed as the cornerstone of this project. Therefore, this study examined the local participation that occurs in the project.

The study examined the demographic characteristics of smallholder farmers who were to participate in the project; the opportunities for their participation; the degree of their empowerment; the nature of communication in the project; and constraints to participation in the MIS. The study employed survey research method, based largely on Norman Uphoff’s framework for types of and opportunities for participation (1977; 1980). The study was a census of all 127 farmer members who constituted the local “Irrigators’ Organization” of the MIS. Of the 127 farmers, 114 members were successfully surveyed, yielding a response rate of 90 percent.

In general, it was found that all farmers participated to some extent in the MIS. For each participation opportunity, an average of 43% of members participated. However, participation in the evaluation opportunity averaged only 20% of members.
Only 42 members ever participated in an opportunity for evaluation. The relative frequency of participation was somewhat low. For an individual opportunity, participants engaged only 31% of the available times to participate. Overall, there were 626 discrete times to participate in the MIS; on average members participated 78.1 times.

In regard to empowerment, participation occurrences in the scheme were most often categorized under the degree of “some power” (Uphoff, 1977). This is the third lowest of six categories. One person, the project chair, communicated over 40% of the information regarding opportunities to participate. The other 14 channels to communicate information were used much less.

It was found that the project was beneficial in increasing the annual income for 60% of members. Participation was significantly associated with this increase in income. There was a “substantial correlation” (Davis, 1990) between increase in income and average relative frequency of participation, suggesting that farmers who participated more often tended to have higher incomes. Overall, respondents said being “not powerful enough to participate” was the main constraint to participation in the MIS. Other reasons for not participating included ill-health and lack of awareness about opportunities.

It is recommended that the power differentials at the local level be further investigated and that the district officials hold training for local project leaders on how to empower. It is also recommended that other channels for disseminating information be used in effort to increase the frequency of participation. Further, it is recommended that the market be examined for opportunities to expand it such that all who use the irrigation scheme might benefit from an increased income.
I would like to dedicate this document to my advisor, Dr. Agung. Thank you for sticking with me, teaching me, and advising me, not only in school but also in life.
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Table of Contents

Assessing Participation in Agricultural Development Projects: A Case Study of the Mbalangwe Irrigation Scheme, Morogoro Rural District, Tanzania ........................................ 1

Abstract ................................................................................................................................. ii

Acknowledgments .................................................................................................................. v

Vita ........................................................................................................................................ vi

Fields of Study ....................................................................................................................... vi

Table of Contents .................................................................................................................. vii

List of Tables .......................................................................................................................... ix

List of Figures ........................................................................................................................ xi

Chapter 1: Introduction to the Research ............................................................................... 1

Chapter 2: Theories, Challenges, and New Conceptualizations of Participation ............ 23

Chapter 3: Methodology of the Research .......................................................................... 46

Chapter 4: Results of the Study .......................................................................................... 71

Chapter 5. Discussion, Implications, Recommendations, Conclusions, and Further
Research .............................................................................................................................. 94

vii
References:.......................................................................................................................... 110

Appendix A: Approval for Exemption from Review by Institutional Review Board .... 116

Appendix B: Comprehensive List and Breakdown of Opportunities to Participate in the
Mbalangwe Irrigation Scheme............................................................................................ 117

Appendix C: Study Instrument ......................................................................................... 119
List of Tables

Table 1: Reliability of survey variables ................................................................. 61
Table 2: General demographics ........................................................................... 72
Table 3: Demographics of education and involvement ........................................... 73
Table 4: Farming characteristics (n=113) ............................................................... 74
Table 5: Wealth indicators .................................................................................... 76
Table 6: Possessions of value ............................................................................... 76
Table 7: Frequency of participation in decision-making opportunities .................. 78
Table 8: Frequency of participation in implementation opportunities .................. 79
Table 9: Frequency of participation in evaluation opportunities ............................ 80
Table 10: Categorizations or empowerment by participation types and participation opportunities .............................................................................................................. 83
Table 11: Relative frequency of channel used, by participation opportunities ........... 86
Table 12: Average change in income per growing season due to yield and price changes ........................................................................................................................................................................... 87
Table 13: Increase capital due to land value ............................................................ 88
Table 14: Agreement with other proposed benefits in the Mbalangwe Irrigation Scheme ........................................................................................................................................................................ 89
Table 15: Agreement with potential constraints ..................................................... 90
Table 16: Other constraints identified by respondents .................................................. 91

Table 17: Breakdown of opportunities to participate in the MIS by participation type . 118
List of Figures

Figure 1: Conceptualization of participation ......................................................... 44
Figure 2: Project area in Mbalangwe, Morogoro Rural District, Tanzania ............. 49
Figure 3: Degree of empowerment of participation by type (Uphoff, 1977) .......... 55
Figure 4: Average level of education completed ................................................... 72
Figure 5: Number of times respondents were visited by extension officer .......... 74
Figure 6: Average annual income ....................................................................... 75
Chapter 1: Introduction to the Research

This chapter introduces the research, and has three main goals: to present the development problem, to outlay the research problem, and to outline the remainder of the thesis project. The first part emphasizes the importance of participation, the history of participation in international development, and the failure of participation which all display the development problem: the ineffectiveness of participation in international development. The second part describes past research on participation, participation in Tanzania, and the statement of the research problem. The third part contains the purpose and objectives, the limitations and assumptions of the study, and the format of the paper, all of which outline the rest of this thesis manuscript.

Meaning and Importance of Participation

This shows the importance of participation by highlighting the demand of participation, defines participation, and explains its benefits.

The demand for participation

It is largely agreed that participation is beneficial, and even necessary, for development; for many decades the importance of participation for the success of international development has been touted. Robert McNamara, as president of the World Bank, jumpstarted the discourse in the 1970s (Kuhnen, 1977). In 1980, Bryant and White stated, "participatory projects in rural development deserve our fullest attention and
commitment” (p. 52). As of 1984, there was general agreement that participation was "essential for development” (Oakley & Marsden, 1984, p. 85), and it was later referred to as the “missing ingredient” (p. 10).


**Definition of participation in international development**

While the importance of participation in international development has generally been agreed upon, pinpointing exactly what is meant by this term has been more contended. In fact, "many authors have suggested it is impossible to establish a universal definition” (Oakley & Marsden, 1984, p. 18). According to Oakley (1991, p. 6), participation defies any attempt at definition, and according to White (1996), it can mean many different things. There is no unanimity among experts on the definition of participation, but rather it has been claimed that it is "impossible to write anything that is universally meaningful about (it)" (Oakley, 1991, p. 230). There has been a lack of studies that operationalized and established an understanding of the term (Oakley & Marsden, 1984, p. 37).

Participation is difficult to define for a number of reasons. Firstly, it is "multi-dimensional,” relating to social, economic, political, and personal aspects of life (Oakley, 1984, p. 32). Participation is not “monolithic” (Kesby, 2007, p. 229), but has a very complex nature. It is contextual, depending on social and economic forces (Oakley, 1991,
p. 14) as well as geography-traditions, politics, (Kesby, Kindon, & Pain, 2007), thus varying from location to location.

Further, it is often a reified concept, described by some as “more myth than reality,” because it is often talked about but not often measured (Oakley, 1991, p. 6). Cohen and Uphoff explained in 1980 that it was not something which occurs discretely; it cannot simply be described as present or not, nor can it measured in the same way as some physical property. It is more of a process than an input (Morgan, 2001; Bryant and White, 1980, p. 41) or an output (Chambers & Guijt, 1995). These factors, along with the fact that it centers on “diversity rather than conformity and attitudes rather than targets” (Chambers & Guijt 1995) make, participation abstract, and thus exceptionally difficult to quantify.

Further, it is not easily quantifiable because it appears to exist to varying extents and degrees (Oakley, 1984, p. 32). White expounded that there are various levels –from nominal to transformative— and also that it is dynamic, changing over time, being influenced by and influencing power structures, and entailing various interests within each group and among groups (White, 1996). Furthermore, one must remember that participation has long occurred – even before academics began to discuss the concept (White, 1996). For example, stakeholders choosing to be part of a project or not is a form of participation; also when stakeholders take the equipment of one project to use it for some other purpose, though this is often frowned upon, this is also participation (White, 1996). Thus, in the midst of all of these complications one must specify exactly what is being considered when conceptualizing participation in international development.
Despite the variety of concepts participation entails, its complexity, and the legitimate concerns about quantifying it, in order to make progress it is necessary to start with a definition as to have something to strive for Oakley & Marsden (1984, p. 37).

There are many definitions of it that have remained remarkably similar over the decades. The 1969 United Nations [UN] Economic and Social Council [ECOSOC resolution] (LVIII), was the basis for participation efforts in the 1970s (Cornwall, 2006) and it defined participation as the voluntary and democratic involvement of the people in "(a) contributing to the development effort, (b) sharing equitably in the benefits derived therefrom and (c) decision-making in respect of setting goals, formulating policies and planning and implementing economic and social development programs" (as cited in Cornwall, 2006). Similarly, Oakley and Marsden stated in 1984, "meaningful participation...in development is concerned with direct access to the resources necessary for development and some active involvement and influence in the decisions affecting those resources" (p. 89). And a similar definition appeared in the World Bank Participation Sourcebook, nearly thirty years after the UN ECOSOC resolution: to "influence and share control over development initiatives and the decisions and resources which affect them" (Havel, 1996). Samuel Paul, as an outsider reviewer of the World Bank in 1987, described that participation "refers to an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits." Cooke (2005, p. 2) encompasses these in a more recent definition, "participation essentially concerns the exercise of popular agency in relation to development." Uphoff and Cohen offered one of the most comprehensive
definitions of participation in 1980, capturing these elements and adding one important element: evaluation; they defined participation as including “people's involvement in decision-making processes about what would be done and how; their involvement in implementing programs and decisions by contributing various resources or cooperating in specific organizations or activities; their sharing in the benefits of development programs; and/or their involvement in efforts to evaluate such programs.”

In addition, when conceptualizing participation, it is enlightening to remember what it is not. It is not a carefully designed blueprint of action (Bryant and White, 1980, p. 41). It is not a quick solution (Chambers & Guijt, 1995; Scoones, 1995); nor is it a "magic bullet" or "panacea" (Morgan, 2001; Kesby, 2007). Participation is not simply a "quantifiable ingredient” to inject into a development project" (Oakley & Marsden, 1984, p. 32); neither is it a "bandage” sticking together old concepts (Chambers & Guijt 1995). Participation will not come to fruition simply through proclaimed commitment; it is not effortless (Oakley, 1991, p. 14).

Benefits of participation

The benefits of participation are many. Some of the common definitions of participation have the benefits listed directly. The Food and Agricultural Organization [FAO], the branch of the United Nations [UN] dealing with food security, defines participation as an effort “to release the energy of rural people by building their confidence to make decisions and carry them out as a community in a self-reliant way (FAO, 2000).” According to the World Congress on Communication for Development
[WCCD], participation deals with “supportive spaces where people can develop a sense of their own priorities and set the agenda (WCCD, 2007, p.31).”

Further participation is needed to “understand stakeholder perceptions, perspectives, values, attitudes, and practices so that they can be incorporated into...development initiatives” (World Bank, CI, and FAO 2007: 9). The objectives according to a World Bank study in 1987 are: “empowerment, building beneficiary capacity, increasing project effectiveness, improving project efficiency, and project cost sharing (Samuel, 2987). Further, it is necessary to ‘initiate and sustain (a) process of change (Chambers and Guijt 2005).’” It can empower disadvantaged, transform organizations, and reorient individuals (Chambers and Guijt 2005). The potential benefits go on (Uphoff, 1986, pp. 425-426; Oakley, 1991, p. 16).

According to International Fund for Agricultural Development [IFAD], participation provides not only improvement in well being, but also progress in social and cultural life. In theory, participation decreases dependence, increases self-confidence, and transforms indigenous knowledge into development solutions (IFAD). The self-confidence gained leads to empowerment, control, and even liberation (IFAD).

Further, in the output of the project, participation is supposed to lead to more accurate information on needs and priorities of the people, creates programs that are more adapted to local conditions, and gives a more accurate picture of the resources of the local people (Uphoff, 1986, p. 425-426). It also mobilizes local resources, provides cheaper access to information, and leads to more cooperation in and maintenance of government programs (Uphoff, 1986, p. 425-426).
History of international development and the role of participation

International Development began in a surprising manner. Understanding its roots is highly beneficial to understanding the complications that surround it today. Each of the successive decades (from 1960-2000s) development has taken on a particular feel, many of them emphasizing participation.

Beginnings of international development in the United States

Development is “a form of directed change in which a state tries to change its internal economy and society, and/or foreign states and institutions try to change it, to...ideally achieve a higher standard of living for its inhabitants.” (Eller, 2009)

International development first began evolving in the 1940s. Foreign aid began in the United States with Harry Truman’s inaugural address of 1949 which laid the groundwork for what came to be known as the Point Four Program; this program had the objective of “making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas” (Truman, 1949). It is important to understand the events surrounding this that led to the birth of international development within the United States.

After winning a surprising victory in the presidential election, Truman was looking for an idea to make his inaugural address “unique and outstanding” (McVety, 2008). Meanwhile, Benjamin Hardy had been trying to convince policy-makers that political and economic instability needed to be curbed through global technical assistance; he proposed the idea –emphasizing the role of this technical assistance in destroying the type of environments in which communism thrives and delivered it to the
White House (McVety, 2008). Shortly thereafter an economist, Walter Salant, proffered the idea that it was necessary to extend capital to the developing world in order to balance world markets and stabilize the world economy (McVety, 2008). This proposal bolstered Hardy’s idea, and they were jointly adopted as the “bold, new program” of Truman’s speech. A State Department officer explained shortly thereafter, that Point Four – the founding basis of US foreign aid—was "only the latest in a long line of United States activities that (sought) to strengthen and generalize peace throughout the world by counteracting the economic conditions that predispose to social and political instability and to war” (McVety, 2008).

*The ’50s: Technology transfer*

This proposal by Truman began the first initial wave of "participatory development" in the 1950s (Mathie and Cunningham, 2003). The term "popular participation” entered participation discourse in the 1960s (Stiefel and Wolfe, 1994). However, looking back after a couple decades, what was meant by participation in the ‘50s and ‘60s would be classified as "political participation,” not modern development participation (Cohen, 1980). The problem was, that throughout this whole period -- the Cold War era-- development was largely equated with modernization (Leal, 2007).

In the 1950s, development was conceived of as technology transfer. The participation that was required was simply adopting the technology, which often failed, purportedly due to traditionalism (Cohen and Uphoff, 1980). This form of participation in development was based on two faulty premises: firstly that the poor were too uneducated or traditional to make necessary adjustments. This premise has many shortcomings, for
the poor have been proven to be highly rational (Bryant and White, 1980, p. 11).

Secondly, it was assumed that any greater form of participation would simply slow down and complicate a project (Bryant and White, 1980, p. 11).

_The ‘60s: Capital formation_

In the 1960s, foreign assistance began to be equated more to resources, and investment in modern capital formation was thought to be the key; the corresponding participation was thus conceptualized as a contribution of resources (Cohen & Uphoff, 1980). By the 1960s it was known that lack of ownership, lack of coordination, too much planning, and a "rhetoric of participation" were harming development (Dijkstra, 2011), things which popular participation was theorized to ameliorate. It was becoming evident that the attempt at foreign industrialization was not working.

In 1966, Title IX of the Foreign Assistance Act officially recognized the contribution of popular participation to development; it was widely recognized during that time that without it development efforts were not effective (Cohen & Uphoff, 1980). This act described an "emphasis...on assuring maximum participation in the task of economic development on the part of the people of the developing countries" (as cited in Cornwall, 2006). In this way, the end of the ‘60s and into the ‘70s, participation was emphasized in development as focus shifted to empowerment and political agency.
The ‘70s: An emphasis on participation

The Pearson commission, initiated by Robert McNamara, president of the World Bank, catalyzed this shift. In 1968 he initiated a study on development, because he saw development failing on many fronts. Lester Pearson headed this investigation into the effectiveness of development assistance by the World Bank over its 20 years of existence (World Bank Archives, 2003). The subsequent report concluded that industrialized and technology-based approaches were not working (Pearson, 1969). This report resulted in the World Bank adopting the basic needs approach in which the proposed participation was a solution to the development problem. This was such a new approach that Dag Hammarskjöld, the UN general secretary, called it “Another Development" (Hammarskjöld, 1975).

The UN ECOSOC resolution (LVIII), also emphasized participation, defining development as that which entailed the people’s voluntary involvement "(a) contributing to the development effort, (b) sharing equitably in the benefits derived therefrom, and (c) decision-making in respect of setting goals, formulating policies and planning and implementing economic and social development programs (Cornwall, 2006)."

It was during this decade that development planners realized that, what little linkages there were between them and stakeholders, were merely one-way, top-down, and extractive; they were not cooperative or supportive (Cohen and Uphoff, 1980). Thus, calls for participation became even more prevalent (Stiefel & Wolfe, 1994). Multiple authors cite a rethink of the role and function of participation in development in this decade (Oakley & Marsden, 1984, p. 1; Bryant & White, 1980, p. 10; Cohen & Uphoff,
This new conceptualization of participation was largely a reaction to dependency that had resulted from development in the ‘60s (Oakley & Marsden, 1984, p. 7). Therefore, "people-centered", "basic-human-needs” and "integrated-rural-development" approaches emerged (Cohen and Uphoff, 1980; Leal, 2007). The model of participation implied during this decade was of development practitioners working with poor people to struggle actively for change (Oakley & Marsden, 1984, p. 9).

The integrated-rural-development approach, which had come out of the World Bank’s emphasis on participation, failed along with the rest of these programs- there still were no studies proving participation.

**The ‘80s: Self-reliance**

Research continued into the 1980s to show that development without participation was typically not successful, and in cases where development programs were implemented without participation, they resulted in increased dependence (Bryant and White, 1980, p. 11); thus, the call for participation persisted. Participation in the 1980s was coined at "self-reliance” (Cornwall, 2006). Some claim there was a resurgence of development in this decade--with a shift toward empowerment (Mathie and Cunningham, 2003; Oakley, 1984, p. 25), but most say it lost ground in the 1980s as development was more focused more on government policies and expectations (Stiefel and Wolfe, 1994). This time is sometimes referred to as the “lost decade” for development (Cornwall, 2006). Regardless of this debate, it was clear that a vast amount of literature had been generated on the theory of participation in development; it was even stated that the term had "come to dominate the literature on development in the early 1980s” (Oakley &
Marsden, 1984, p. 1). It was further stated that the professional's role in development, as of 1980, was to bring about participation, and the participatory projects in development “deserve our fullest attention and commitment” (Bryant and White, 1980, p. 12; p. 52). It was widely seen as a key to development: the "missing ingredient” (Oakley, 1984, p. 1). Up to this time participation was dominantly viewed as a means or input, and not an end (Oakley, 1984).

The focus of participatory development was on organization of the poor, government decentralization, planning at the local level, and participation-based development projects (Bryant and White, 1980, p. 10); it was largely associated with mobilization (Oakley, 1984, p. 46) and conscientization (Oakley, 1984, p. 49). Rural Rapid Appraisal [RRA] and the related Participatory Rural Appraisal [PRA] became very popular approaches in the 1980s (Kesby, 2007; Chambers, 1983).

The ‘90s: Human dimensions

Following the hands-off approach of self-reliance in the 1980s, there was a strong return to a focus on human development in the 1990s: a focus on the human dimensions. In 1991, Oakley stated that the single idea emerging from re-evaluation of development was participation (p. 3). This idea was used to emphasize empowerment and political agency, attempting to address that which was lacking in the self-reliance approach of the ‘80s (Cornwall, 2006). Participation was even approached innovatively, as if it was a new concept (Cornwall, 2006). The language of participation became especially strong in this period (Cornwall, 2006); it was hoped in the early 1990s to offer "a way out of otherwise insoluble crises of human relationships and livelihoods” (Stiefel
and Wolfe, 1994). The neoliberal period, from the late ‘80s through the ‘90s, witnessed the emergence of a literature focused on social movements: "sustainable development," "participatory," "capacity building," “human rights”, and "good governance” (Morgan 2001; Cornwall, 2006)." This coincided with the rapid increase in development agencies (Cornwall, 2006). One prominent example was the formation of the United Nations Development Program [UNDP] in the 1990s, a branch of the United Nations focusing on "developing local capacity" among the poor.

*New millennium: The new aid paradigm*

Between 1997 and 2000, many third-world countries shifted toward a policy of decentralization and implemented large-scale participatory agricultural development programs. Into the 21st century, this shift continued toward participatory development. This led to that which has now become known as the "new aid paradigm” (Mack, 2007). The major emphasis of this new paradigm has been poverty reduction (Leal, 2007; Mack, 2007). The focus of development recently has been on decentralization, accountability, and increasingly on citizenship (Cornwall & Gaventa 2001; Cornwall, 2006). And again, as the ‘90s, it has been done with "an air of newness, novelty, and even idealism" (Cornwall, 2006). The turn-of-the-century included the formation of the millennium development goals by the United Nations as well as a new approach building on the participation-principles of the IRD referred to as Poverty Reduction Strategy Papers [PRSPs] by the World Bank.
Failure of participation over the decades

Despite a continued reoccurring emphasis on participation, it has experienced only spotty success for nearly half a century.

The 1970s through 1990s: Failing to implement participation

In the 1970s, although participation was strongly desired, there was a problem implementing participation. In the midst of participatory planning of the ‘70s, it was quickly found that "showy projects" or those that are simply “good in theory,” are often not effective (Mende, 1973). Despite years of promotion, Lele (1975) reported that community participation was non-existent (Lele, 1975). But in the meantime, research continued to show development that included participation was more effective: the House Committee on Foreign Affairs reported a close relationship between participation and effectiveness (Cohen and Uphoff, 1980). Research showed that development without participation was not successful but served only to increase dependence (Bryant and White, 1980, p. 11).

Participation in the 1980s was at most incomplete in its implementation. Reports in the ‘80s claimed, "some impact in terms of relief of a temporary nature seems to have been felt (but) the problems remain largely unaddressed" (Oakley & Marsden, 1984, p. 11). Oakley also confirmed Lele's observation from nearly a decade earlier of "few examples of rural people effectively participating in the planning process” (Oakley & Marsden, 1984, p. 21). In other words, it still had not been implemented. According to FAO Rural Organizations Programme [ROAP] "formal organizations have been inadequate in facilitating the participation of the rural poor" (Oakley, 1984, p. 23).
UN confirmed that, "in spite of insistence on popular participation...it seldom occurs” (Oakley, 1984, p. 29). Empowerment had not occurred much in 1984 according to Oakley, likely resulting from the government not making it a priority to give power to the rural poor (Oakley, 1984, p. 65).

There was a lack of empirical evidence regarding the effect of participation in the 1990s. In 1991 Oakley went on to conclude that, despite an increase of large investments in participation, the results remained "unclear" (Oakley, 1991, p. 15). And in 1993 it was still being cited that lack of participation was causing problems in implementation of development (Rondinelli, 1993).

Further, it was found in this decade that participation is not successful when thought of as a single brief exercise (Chambers & Guijt, 1995). Some claim that there is "no doubt about the success of participatory approaches,” citing, the increased interest from donors, organizations, governments and NGOs (Chambers & Guijt, 1995). However, this was simply describing their popularity. It was also found in 1995 that many large aid bureaucracies used the language of participation when it was not effective (Scoones, 1995).

Despite a few claims of success, Cleaver –a contemporary expert on participation—stated the general consensus that there was "little evidence of the long-term effectiveness of participation in materially improving the conditions of the most vulnerable people or as a strategy for social change (1999)." Some reported an increase in efficiency, but no empirical evidence for empowerment or sustainability was shown; the latter were supported only in theory (Cleaver, 1999).
Participation in World Bank projects

Incorporating participation into World Bank projects, according to Paul (1987), was much more reactive than proactive: stakeholder governments or agencies usually provided the initiative. In 1987, Samuel Paul did an extensive evaluation on the role of community participation [CP] in 50 of the World Bank’s top development projects. Of the five objectives of community participation, the top three in the review were cost sharing, project efficiency and project effectiveness, but the percentages were nowhere near 100% successful. CP was introduced in 38% of the projects to increase project effectiveness but only 25% were able to implement it. They had reasonable success in matching services to beneficiary needs, and mobilizing demand, which in turn contributed to effectiveness. Although 48% of the projects planned CP for efficiency, only 35% translated it into specific activities. Cost sharing was the objective of 48% of the projects, 35% attempted to convert plans into actions, but only 10% achieved some measure of success (Paul, 1987).

The two lowest-achieved objectives by the World Bank Projects were empowerment and capacity-building, ironically the two facets of participation claimed to be most beneficial to stakeholders and to project sustainability, but also those two necessitating the highest intensity of CP (Paul, 1987). Only three projects (8%) involved empowerment. Despite the overwhelming emphasis on empowerment in the participation literature, it is "not a major objective of Bank projects" (Paul, 1987). Building institutional capacity was the objective of only 18% of the projects, even though the World Bank published in 1996 that capacity building was one of the major things to
implement in order to improve the rate of poor participating. These projects mainly focused on maintaining physical infrastructure or simple management by stakeholders (Paul, 1987). Empowerment was treated more as a component that should sometimes be used in development projects than a main thrust of participation; furthermore, it was cited that the only projects in which stakeholders were actively involved were unplanned (Paul, 1987). Results did show that capacity building has grown since 1975 (Paul, 1987).

The 2000s: Results still unclear

Within the last decade, success of participation still remains unsubstantiated (Hickey and Mohan, 2005 p.4). The recent World Congress on Communication reported "limited participation" of the poorest in the development process (World Bank, CI, and FAO 2007, p. 2). Other experts have also recently reported a "historic and systemic failure of the development industry to 'fix' chronic underdevelopment" (Leal, 2007).

Some experts stated that participation was as "ubiquitous as ever" (Hickey and Mohan, 2005, p. 3), but there was not notable improvement in the effectiveness of international development. Even the PRSP's were critiqued for being top-down during this time. The World Bank has been consistently promoting participation for 45 years, but one of the major problems is the lack of clarity as to what is meant by local participation.

Research base on participation

In order to learn more about the enigma of the successfulness of participation, one must turn from experience to research. When researching participation, it is important to evaluate it within a particular context and culture (Morgan, 2001; Cleaver, 1999).
However, within the entire nation of Tanzania, there is only a small amount of published information on participation; it is sparse and not very cohesive (Miller, 1970; Fortman, 1980; La Ferrara, 2002). From the few studies that have been done, Lorwell (2009) cites the participation as limited.

Currently, the base of research on participation in international development is also weak (Webler and Tuler, 2000). The literature on participation has been widespread and popular since 1970; however, this largely consists of abstract conceptualizations or limited case studies. Due to its trend of continually being “rediscovered,” the discourse is rife with the theoretical benefits and the pressing need for participation (Cornwall, 2006).

Roberts (2003) stated that while the discourse is “rich in case studies…there have been no attempts at meta-analysis across cases” (Roberts, 2003). He attributes this lack of theory development to the complexity of the topic. Likewise, there is a lack of quantitative studies in participation (Oakley, 1984).

Participation in Tanzania

In Tanzania there is a clear need for a correct conceptualization of participation. Throughout the country’s history there have been many different approached attempted to implement participation. Tanzania first committed to the “central role” of participation at the World Conference on Agrarian Reform and Rural Development [WCARRD] in 1979 (Oakley, 1984, p. 89). However, Tanzania’s history and former government have hindered participation of the people in Tanzania (Fortman, 1980; Green, 2000). The country has struggled with implementing proper participation since decentralization reforms in 1984 (Semboja and Therkilsden, 1994). Eckert (2007) quotes former President Nyerere: “we
had these two useful instruments of participation (cooperatives and decentralization) and we got rid of them.”

In the early years, the development that existed was done simply for the ability to say that development was being attempted; there was no true development (Fortman 1980). This together with Tanzania’s complicated history related to participation, resulted in a state of “no development” in the 1990s (Green, 2000). Thus people were not concerned with community participation. This beleaguered past has led to a current state where multiple contradictory views on participation and an “impure” adoption of participation as the norm (Marsland, 2006).

However, in the last 15 years, Tanzania has made some key policy reforms to help foster an environment for participation. In 1998 they first implemented the Local Government Reform Program [LGRP], which was intended to decentralize government (United Republic of Tanzania, 2009). This plan was renewed in 2008 for another five-year decentralization push referred to as Decentralization by Devolution [DbD] (United Republic of Tanzania, 2009). Both of these plans were done in a concerted effort with the new, unified Agricultural Sector Development Strategy [ASDS] launched in 2005, which emphasized decentralization and pluralization in the government system and in the extension system (United Republic of Tanzania, 2003). This plan of decentralized development is operationalized by giving money to the District Agricultural Development Office [DADO] in the form of grants to fund District Agricultural Development Projects [DADP]. While this new structure in Tanzania is a promising sign for promoting participation, these plans have yet to be evaluated for effectiveness.
Morogoro Rural District [MRD] is one of the largest recipients of agricultural development in the Morogoro Region. However, published studies on participation in both this district and region are lacking. Although participation is emphasized in all of the agricultural development projects in Morogoro Rural District, they have not seen overwhelming success (Wolster, 2009).

The project in Morogoro Rural District most lauded for its participatory approach is the Mbalangwe Irrigation scheme, located in Tununguo village. This irrigation scheme, which began in year 2007, has a target area of 500 hectares and could benefit up to 3,500 people (Pyumpa, 2012). The scheme expounded on work begun by a local farmer; in this manner it gained its reputation for exceptional participation. While the Mbalangwe Irrigation Scheme [MIS] is one project in MRD that is supposed to have exceptional participation, no official research has been done to assess the participation of farmers in this project.

Problem Statement

The problem lies within the fact that major development agencies have insisted for years that active participation of stakeholders is essential for development, yet quantitative and systematic analysis is lacking. Reports have suggested for decades that participation is not effectively promoted in development. Tanzania is the recipient of much development aid, but, despite the purported significance of participation, no information is readily available regarding participation. The continued emphasis of participation begs further investigation of this concept. Participation has long been heralded in development and is still actively desired in development initiatives. While
claimed to be an exceptionally participatory project, little is known about the participation of farmers in the Mbalangwe Irrigation Scheme.

Purpose and Objectives

The purpose of the study is to describe the dimensions of participation of farmers in the Mbalangwe Irrigation Scheme in Morogoro Rural District in Tanzania. This purpose will be achieved through the following objectives:

1. To describe the demographic characteristics of participants in the Mbalangwe Irrigation Scheme.

2. To describe the frequency of participation in different participation opportunities in the project.

3. To describe the degree of empowerment of participation (Figure 3) in the MIS.

4. To describe how members found out about participation opportunities in the Mbalangwe Irrigation Scheme.

5. To examine the benefits of participation in the Mbalangwe Irrigation Scheme.

6. To describe potential constraints to participation for members of the Mbalangwe Irrigation Scheme.

Limitations and Assumptions

Resources limit this study. The time for doing research was limited to September and October 2013 and the research was done on a limited budget. These limitations restrained the amount of travelling that could be done and the amount of time that could be spent sampling. For this reason, the study is limited to one district and one project within that district.
Organization of the Study

This thesis is formatted into five chapters. The first chapter is the introduction to the research and statement of the problem. Chapter two reviews the different conceptualizations of participation in international development along with their challenges and alternative strategies and also presents the conceptual framework of this study. Chapter three details the methodology used. Chapter four will list the data and results, while chapter five will include discussions, conclusions and recommendations for future research. Appendix A contains a breakdown of opportunities categorized by Norman Uphoff’s framework of participation and Appendix B contains the instrument used in the study.
Chapter 2: Theories, Challenges, and New Conceptualizations of Participation

This chapter outlines five conceptualizations of participation over the years starting in the 1960s. It also describes a conceptual framework for this study. The literature on participation in development can be viewed in five parts, these are: an economic view of participation, the transition to a new conception of participation entailing different levels of power, the basic human right view of participation, the view of participation as both power and political involvement, and lastly, communication’s view of participation will be discussed.

Economic approach to participation

In the economic approach to participation, development was viewed to correlate with the process of industrialization. It focused on participation as merely an input to accomplish development objectives, a means to an end. The goal of participation in this view was to make development more efficient. This view was most prevalent in the 1960s and 70s among the large development agencies.

Rogers discussed a shift in the dominant aid paradigm, a shift from an industrial view of development, to one focusing more on individuals (1973). It was during the late 1960s that participation began to flourish; however, there were many carryovers from industrialism (Cornwall, 2006).
The first theory that was adopted during that time was a more economical view of participation. This drew from old ways of thinking about development: a process of planning, and inputs, with the goal to make it as efficient as possible. There were large carryovers from industrialization in this view of participation. While these principles of industrialism were not intentionally promoted, they were easily resorted to.

By 1971, participation was described as a trend in mainstream development circles (UNESCO); it was clear from major publications that participation was viewed as something that could be tacked on to traditional development schemes. For example, there were numerous hearings for the U.S. Congress entitled, ”To provide for increased participation” (United States, 1968a, 1968b, 1969a, 1969b, 1971). Title IX of the United States Foreign Assistance Act reinforced this view that the goal was simply to “Increase Participation in Development” (A.I.D., 1970). Even within the United Nations, there was a definite view that one simply had to “prepare” the former approach in development to add on participation (Adiseshiah & UNESCO, 1969).

In 1972, we began to see the reasoning for this participation among the large development agencies at the international conference, “One World Only.” Even in the name of the seventh session of this esteemed conference we see participation described as “Rural and Agricultural Manpower in Development” (Freidrich, Ebert & Stiftung, 1972). This type of participation was desired in order to harness poor manpower and make development more efficient.

Professionals were focused on problem and problem solving, not available assets (Chambers, 1974). The key focus of this approach was the solution of the problem; local
participation is thus used as a path to motivate the rural people to join projects. In summary, participation was a means to accomplish an end; it was viewed as an additional input that could be added to development plans to expedite the process.

The same principles of this view were first largely seen in the US “War on Poverty,” declared by Lyndon B. Johnson (Act, E.O., 1964). “Urban and Rural Community Action,” a program within the Economic Opportunity [EO] Act, aimed to provide financial and technical assistance to create community action programs with the goal of “maximum feasible participation” of the poor (Act, E.O., 1964). Many scholars in this era felt that this process of participation was used simply to legitimize governments’ approaches (Moynihan, 1969). The “internal contradictions” of this program were cited as early as 1969, Moynihan stating that community action programs were simply games of “phony participation.”

Other critiques to this economic view on participation revolved around the fact that participation was simplified only to a means to an end. Participation was not the basis of development; it was simply an add-on. Further, it was seen simply as one, disposable piece of development; farmers and critics alike began to question the effectiveness of participation in the 1970s amidst big development (Mathie and Cunningham, 2003).

As development continued to fail in the early 1970s, improved planning was always seen as the key. Failure was blamed on administration and policies (Chambers, 1974). Chambers (1974) finally pointed out that there was too much planning, the fashionable aspect of development, and not enough focus on implementation (Chambers, 1974). This resulted in a dangerous gap between rhetoric and action and a separation
between theoretician and practitioner that prevented meaningful participation to be elicited (Chambers, 1974). Ultimately, there was the problem that development was capital-centered, focusing on the amount of dollars flowing through the project, rather than people-centered.

Participation as levels of power

In the late 1960s and onward, another view was emphasized that there were actually multiple levels of participation. Fundamentally, these were differing levels of power that were being offered to participants. These criticisms of industrialism regarding the focus on simple inputs eventually started to expose the fact that participation was not a simple variable. Rather, there were many different levels to it: some over-simplified, some meaningful. This distinction between the levels of participation is what first began the dialogue on the inherent implications of power within the term participation.

Participation theory is founded on Arnstein’s work, Ladder of Citizen Participation, from 1969 (Purdam and Crisp, 2009). Arnstein (1969) categorized various approaches to citizen participation ranging from manipulation to citizen control in this seminal work on participation theory. She described participation as the “critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of processes (Arnstein, 1969).” Arnstein’s “Ladder of Citizen Participation” defines participation as a “redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included (Arnstein, 1969).” It also recognizes that there are varying levels of participation, proffering eight different rungs. In descending order they are: citizen
control, delegated power, partnership, placation, consultation, informing, therapy, manipulation; each of these are grouped in one of three broader categories, ranging from Citizen Power, to Tokenism, to Non-participation.

This ladder effectively highlights “the fundamental divisions” between powerless citizens and the powerful, juxtaposing the two (Arnstein, 1969). Arnstein’s theory illuminates that participation can occur at varying levels, can have definitions varying by viewpoint, should involve both the power holders and “have-nots,” and fundamentally involves the transfer of power (1969).

Some work has been done to expound on Arnstein’s theory, expanding the number of steps or rungs (Burns, et. al, 2001). Also, some later models expanded further by claiming that more control is not always necessarily better but rather some are acceptable in different contexts (Winstanley, 1995; Wilcox, 1999).

Wilson and Wilde (2003), two current community development scholars, later expanded this theory into a useful framework based on four dimensions. In conclusion, Arnstein’s work clearly shows that the working definitions of participation can vary, and that there are varying levels of varying effectiveness of participation. Levels range from power holders to have-nots and participation must fundamentally entail the transfer of power.

There are others who have also discussed varying levels of participation. According to White, there is nominal participation, instrumental participation, representative participation, and transformative participation (1996). Each of these categories is based on how much power is transferred.
However, a key for any of this to be achieved, Chambers emphasized, is a political will to reach the poor; "the non-revolutionary course toward (a more equitable society) requires a sustained effort, a high level of management in the rural areas, and above all a credible and consistent political will" (Chambers, 1974).

One limit of Arnstein’s theory is that it views participation in discrete increments, rather than on an infinite scale. Arnstein recognized the eight rungs as an “oversimplification” (1969). The theory is broader than some later models, but Arnstein herself stated, “there might be 150 rungs with less sharp…distinctions among them” (1969). Another weakness of Arnstein’s model is the assumption that giving more control to the “have-nots” is always better (Arnstein, 1969). Further, this view has also been criticized as using participation as a means to an end, or simply one input in a project, forgetting what was learned from prior conceptualizations. Also, if this transfer of power is regularly given from development workers to stakeholders, this can actually create an attitude of dependence.

Even through this conceptualization, participation was still simply an add-on (Leal, 2007), not a true transfer of power. This transfer of power in name-only created an alibi for the failure of development by supposedly transferring ownership to the poor (Leal, 2007). This view of power-transfer is not going against the status quo, but rather "repoliticized” in the service of the neo-liberal agenda; power, in this view, was divorced from its roots politics and ideology, thus limiting its effectiveness (Leal, 2007).

Some have criticized this approach to participation saying that it is a way to more easily control people by including them in programs rather than excluding them (Hite,
Lastly, the term participation can also become reified in this approach: often being used, but never indicating something concrete in within project (Hickey and Mohan 2005). This points out another danger to participation, which is the image, or rhetoric, of participation. Oakley clearly established the significance of participation in international development, but just a few years later commented that "participation is more illusory than real (Oakley 1991, p. 15)." Many large aid bureaucracies simply use the language of participation and this, in itself, is not effective (Scoones, 1995).

The basic human right view

In the 1980s participation was often approached with a very specific list of steps that were to be done to elicit participation. This approach began with technification of social and political problems (Leal, 2007). This high emphasis on structured participation grew out of the burgeoning value for participation as a basic human right. Also, this was done as a reaction to the previous critique of participation too often being reified. Participation was viewed as a basic human right, and thus no projects were done without participation: this often resulted in the very programized approach to participation. Even more often, however, the complexities or restrictions of these technified participatory approaches, such as the Participatory Learning Approach [PLA], Rapid Rural Appraisal [RRA], Participatory Rural Appraisal [PRA], led to a laissez faire attitude from development officials: the complete lack of involvement with development. This is why it was also referred to as self-reliance during this period (Cornwall, 2006).

Participation can be conceptualized not only as necessary for the success of development but also as a basic human right. Sen (1985a, 1985b) argues that the goal of
development is to expand the capabilities of people to live lives of their choosing. He says that one must look beyond income and poverty, and he identifies four broad factors that condition how well income can be converted into “the capability” to live a minimally acceptable life. Income is a means to an end, not an end itself; Sen argues that this capability in life is the end goal of development (1985a). Thus, development deals largely with choice (Sen, 1985a; 1985b). Participation is a major part of this choice: the freedom to say what development looks like.

Further, in a broad view of development, such as that of Sen (1985a; 1985b), participation can be seen as a “need.” In such a conceptualization, development not only encompasses physiological and safety needs, but should also be addressing esteem needs by boosting self-esteem, confidence, and achievement (Maslow, 1943).

Participation was finally recognized as an end in itself, but because of the high emphasis on participation, it was only attempted during this period with a specific list of steps, such as Participatory Rural Appraisal [PRA], Participatory Learning and Action [PLA] or stake-holder analysis (Leal, 2007). This emphasis on techniques, rather than the heart of empowerment, ensured a project with participation at least in name (Leal, 2007).

Because of the over-technification of participation, this often resulted in self-reliance. This was leaving people to do development “for one’s self” (Cornwall, 2006); unfortunately, it resulted in a lack of necessary empowerment in development, and for the most part, the status quo remained (Oakley, 1991, p. 21).
When participation is not facilitated, or is only facilitated superficially, there are problems with social structures, low-capacity building, and other issues. For example, self-reliance let the delivery of project services be inhibited because of issues involving inadequate technology. Most women also suffered during this period with sparse development facilitators, their development being restrained by the fact that they lived in a male-dominated culture and society, which prescribe women to roles of non-influence (Oakley, 1991).

An overemphasis on method many times led to the demise of participatory development, or to a claim of successful development, with only a superficial understanding of the true principles of empowerment (Guijt & Shah 1998, p. 5). Problems arise whenever development or participation is thought of as a single brief exercise (Chambers & Guijt, 1995).

That participation which was simply based around methods, created participation that was too rigid both in structure and in the timetables of projects (Oakley, 1986). This resulted in very shallow participation in which all the threatening elements could be purged, and participation could be “re-engineered as an instrument” that would simply play a role within the status quo (Leal, 2007). Others also criticized this technified approach as simply a set of instrumental methodologies driven by external actors (Hickey and Mohan, 2005).

Further, these methods have the problem of ignoring past and/or present participation theory: creating the paradoxes in development, such as technical
participatory methods and the standardization of participatory approaches (Guijt & Shah 1998, p. 5).

Further obstacles include distance and time. Most of the rural development planning takes place in governmental ministries in urban areas where there is a very limited chance that rural people can participate (Oakley, 1991). Additionally, the costs in terms of finances and time for these participatory approaches are substantial, and thus limited their widespread use.

Also, during this time, Samuel Paul’s study of the World Bank in 1987 revealed some projects with participation and others without participation that were termed "successful", despite nearly forty years of literature supporting participation. At this time, participation was still seen as a potential input to projects to help make them successful (Paul, 1987), rather than an end in itself. Thus, the notion of participation as a basic human right, had yet to permeate some of the largest development organizations.

Further, this 1987 study of World Bank projects clearly displayed that some projects have participation and some projects are without; it was something that was simply added on, or "introduced", to some projects as an afterthought. Lastly, "participation efforts in the 1980s and ‘90s often bypassed the national and district levels of...planning and policymaking," and program-level commitment is not sufficient; one must work in the larger government system (Morgan, 2001). According to Mdgeley (1987), it has been a major failing that the government does not have to do with promoting participation.
The political-power approach to participation

In the 1990s through early 2000s, the previous views of participation had been criticized for a superficial understanding of empowerment principles (Guijt & Shah 1998, p. 5). Up to this point, participation had largely just been a component that was added on to a project (Leal, 2007), not a true transfer of power. Simultaneously, participation was also commonly criticized for bypassing the district and national government and politics in general (Morgan 2001). Out of these critiques grew an approach encompassing both politics and a radical view regarding the transfer of power.

As early 1983, Chambers was one who had started to get back to the radical roots of participation. However, this conceptualization originated from the emancipatory pedagogy of Paulo Freire (1970), a view of the poor being oppressed by oppressors who rationally justify this power-imbalanced relationship.

The principal objective of this Marxist-oriented school of Participatory Action Research [PAR] was not development, but rather “transformation of the cultural, political, and economic structures which reproduce poverty and marginalization” (Leal, 2007). Thus, it consisted primarily with power, but largely existed in the realm of politics. In the early 2000s, participation was seen as a political approach to make social transformation possible (Leal, 2007).

There are other theories that also ground international development participation in politics. One prominent theory of political participation is the civic voluntarism model by Verba, Schlozman, and Brady (1995). However, the problems with this and other political participation models are that they still are underdeveloped (Whiteley and Seyd,
2002), they are limited to politics and thus typically deal with developed countries, and also that they focus on one side -- the participants (Whiteley and Seyd, 2002).

Leal, and other recent participation critics have developed these narrow political views, stating that participatory approaches are “most likely to succeed where they are pursued as part of a wider (radical) political project and where they are aimed specifically at securing citizenship rights and participation for marginal and subordinate groups” (2007; Hickey and Mohan, 2005). In this approach, participation, power, and politics were intricately combined. The political right to participation is a fundamental ingredient for transformative change process to occur (Hickey and Mohan, 2005).

The main challenge to this approach is that participation in the political arena alone is inadequate. Participation cannot be confined to just certain arenas. Kesby cited that many participatory techniques lacked a wider collaborative approach or participatory worldview (2007, p. 17).

The year 2001 was the highpoint of the critique against participation, mainly citing insufficient citizenship and an incomplete understanding of power (Hickey & Mohan, 2005). This is what led many to the political-power approach. However, while this approach emphasizes the importance of political structures, Oakley (1984, p. 23) claimed that these systems, namely bureaucratic constraints, were what hindered development. Decades prior, Oakley claimed that governments were more concerned with collaboration and the potential benefits to them from participation than with giving power to the rural poor (1984, p. 65).
Additionally, to focus primarily on political participation, is seen as hostile to the notion of reducing central control (Oakley, 1991, p. 21). One of the main questions is whether the government is seeing participation as a means to simply mobilize rural resources or as a way to ameliorate the plight of the rural poor and truly correcting imbalances (Oakley, 1991, p. 22).

Further, participation that is formed within the political arena, such as the recent rounds of PRSPs, has been criticized as “shallow and tendentious,” (Gould & Ojanen, 2003). They were mostly formed by elites in the capital city and CSOs, coming with other ideas, were sidelined (Mack, 2007).

Another major critique with leaving participation in the political arena is that centuries of domination will not simply disappear overnight (Oakley, 1991, pg. 4). The basic problem lies with empowerment; many believe that power cannot simply be given from powerful to powerless, but can only be acquired by conquest (Leal, 2007).

Lastly, Freire noted that participation must overcome a culture of silence, but this political-power view of participation does not offer us a means to be able to construct the space for and culture of participation (Leal, 2007).

Communication for participation

One of the last conceptualizations of participation is that of Communication in Development. This is also one of the first approaches that can describe a specific means of achieving participation or empowerment. Communication is that which is necessary to overcome the “culture of silence” (Freire, 1972) and construct space and a new culture of participation (Leal, 2007).
A shift toward Communication for Development [C4D] first began at the same time as the large shift in international development – the 1970s. This was referred to by Rogers as “the rise and fall of the dominant paradigm.” This later caused a shift in the view of communication in development. However, a model for this was late in forthcoming. Rogers began this view of communication for development. Agung’a has recently begun to operationalize it, and a variety of other institutions have also begun to recognize the need for C4D.

A theory that is often overlooked in participation is the diffusion of innovations by Roger in 1962. Rogers built on this to later explain the role of communication in development (Rogers, 1976). He built on the S-M-C-R-E theory of communication by Laswell (1948), a primarily top-down mode.

Unfortunately, communication was not always a participatory approach to development. It was essentially a way to disseminate knowledge. Rogers later claimed that communication was a two-way exchange (1995) and had previously urged research on the interaction between the source and the receiver or communication; his research having proven there was an interesting relationship (Rogers, 1970). However, he never proffered an accompanying model two-way communication.

Thus, while this theory was not originally participatory, “the rise and fall of the dominant paradigm” of communication in development, changed the view. Rogers in 1976 was one of the first to discuss how communication influenced the old concept of development.
Rogers explained that by the 1970s, the dominant paradigm, of industrialization as development, had passed. This was replaced by ideas of equality, quality of life, and participation. This change in the conceptualization of development entailed a shift in the role of communication in development.

Formerly, it had focused on mass communication, believing that it was the magic bullet for change. It was during this time, however, that empirical research showed that mass media did not have a direct and powerful influence on development as had once been thought. Critics of this paradigm then began to question the content of the mass media, the need for social structural changes to accompany communication, and the simplistic view of diffusion of innovations once held.

As the paradigm for development shifted in the 1970s, so did the paradigm for communication. These changes in tandem opened up the space necessary for participation in development. Rogers was one of the first to recognize this, but never developed a model for this role of communication in development.

This lack of model to operationalize C4D, together with a lack of a supporting academic discipline and the lack of empirical testing, have contributed to a slow development of C4D as a discipline (Agunga, 2012).

Habermas’s theory of communicative action is important because it further explains the link between communication and participation; it shows that participation is essentially a discourse (1976). It states that participation calls for uncoerced discussion: an “ideal speech situation,” for “leveling the playing field” (Habermas, 1973). Renn and Weber revise this; communicative competence is a feature of the process, not of quality.
of the individual (1995). Principles from this theory include fairness, competence, access, and power (Webler, et. al, 1995).

Alternative theories have also been proffered. For example, work by Tuler and Webler in 2000 was the basis of a new theoretical perspective focusing mainly on the rules of participation. This was based on previous work on normative communication between public officials and other participants (Renn and Webler 1995; Habermas, 1973). This set of rules explains the means of participation; in particular it shows that participation is based on talk (Webler and Tuler, 2000).

This model is referred to as the Fairness and Competence model. Fairness and competence are the two discursive standard criteria. The principles from the theory are fairness refers to: attending the discourse, initiating discourse, participating in discourse, and participating in decision making. Competence refers to the access to information and its interpretations, use of best available procedures of knowledge selection.

One of the main challenges raised to this approach was the fact that it was not participatory; it was not two-way. It was a top-down approach, in which the owner knew what was right and utilized communication mechanisms to implement this. Also, one other concern with this approach is the fact that a strong community leader is needed, and these types of community leaders are in short supply (Mack, 2007).

Alternative strategy of Communication for Development

Out of the above challenges, and alternative strategy of Communication for development [C4D] has been developed. Agunga is one who has operationalized C4D as a strategy for strengthening agricultural extension as a facilitator of development (2012).
He began by setting parameters on the definition of C4D, seeing that of “purposeful mediated communication and support by, and for, a range of communication stakeholders in the setting of international development and human rights” as too broad since it encompasses all persons in the field of communication; and that which was agreed upon at the “Rome Consensus”, a declaration that was agreed upon by the World Congress on Communication for Development [WCCD], as too narrow since it limits what C4D workers might actually do (Agunga, 2012).

Building on the definition from the WCCD, Agunga suggested an alternative definition as that development which is “impact-oriented and (in which) the burden of success rests with the C4D strategist.” This C4D strategist is one who might “help create the human environment necessary for a development program to succeed (by addressing) the informational, motivational, and educational activities needed to change indifference people might have to interest and commitment, ignorance to knowledge, position to acceptance and support, and established attitudes or habits that militate against change to ones that actively promote it.” This conceptualization of C4D and the C4D strategist was founded on the idea of a “development catalyst” by Gran (1983) and Hope (1984): “one who is visionary, creative, and knowledgeable of the development environment.”

While Agunga developed a testable strategy for C4D, he has run into a variety of obstacles to test it. His model includes a C4D center with a C4D expert at the head. He recognized the need for these centers to be participatory, allowing the basis of strategy to be on needs, not trying to conform needs to the strategy.
Other major schools of thought in modern C4D include the UNDP, the World Bank, and various authors. The United Nations defines Communication for Development [C4D] as a process that “allows communities to speak out, express their aspirations and concerns, and participate in the decisions that relate to their development.” (General Assembly Resolution 51/172, article). Since C4D is based on dialogue, it is able to promote stakeholder participation (WCCD, 2007). It gives voice to stakeholders, allowing them to participate directly in “defining and implementing solutions and identifying development directions.” (WCCD, PG.9)

In participatory communication theory, communication is the goal of development, according to Inagaki of the World Bank for it is seen as a means of “self-development (Inagaki, pg. 8).” The goal is to include people, particularly under-marginalized, and this is done by giving them a means of communicating. This model aspires to accomplish some or all of the following: include the intended beneficiaries in the project, promote horizontal dialogue, foster mutual understanding rather than persuasion by cultivating trust, promote local-level actions, value local knowledge, have development specialists be equal participants viewed as facilitators, value the communication process more than outcomes, and use of communication to express “deep-seated social relations” (Inagaki, pg. 7).

The major shift that needs to happen to foster these forms of participation is two-way communication. This is done by enabling the most under marginalized to express themselves; though communication functions both ways, focus must be placed here, rather than on the dissemination of information (Panos London, 2007).
In C4D, according to McCall of UNICEF, one way people can be empowered and given a voice is through Information Communication Technologies (ICTS) (2011). It is accepted that “the impact of communication and information processes on societies of every kind is going to increase rapidly in the coming decades (McCall, 2011).” What C4D theory elucidates is that for these neutral technologies to be effective development tools, people need development support, appropriate accessibility, and the necessary skills.

Communication is able to foster development by prioritizing human rights and empowerment of the poor. A variety of channels are used to enable the disadvantaged. Community media is used to give voice, participation is elicited from all, and information is given to the marginalized. Empowerment in C4D gives stakeholders the means to speak out which leads to national ownership. Providing access to information and equity does this. Further, C4D can promote gender equality by dialoguing to change cultural attitudes, helping women lobby, challenging cultural perceptions through the media. C4D also works to be sustainable by facilitating behavioral change and disseminating facts. Lastly, Communication can help improve development effectiveness by providing accountability to the government (Inagaki, 2007).

Conceptual framework of this study

In order to thoroughly describe participation it is important to look at its different aspects and how they fit together: break it into pieces to effectively measure it. In this manner it can more easily be comprehended and measured. One might picture the multifaceted concept of participation as a building, for it is built by a process, has many
different parts, and –although it maybe complicated –is measurable. It is good to remember that many parts are quantifiable, but there are some aspects that can only be described qualitatively. In this way Arnstein’s theory that there are varying levels of participation, some inherently better than others, is combined with Norman Uphoff’s multi-dimensional framework of participation, which shows the different pieces of participation (1977). It is important also to remember that participation is both a means and an end (Oakley & Marsden, 1984, p. 10).

The three dimensions of participation, according to Uphoff, are who, what, and how. Within the “what” dimension there are four types of participation: Decision-Making, Implementation, Benefits, and Evaluation (Uphoff, 1977). All of these are equally important aspects of the participation in a project, but each has unique qualities.

To depict this typology of participation, one might imagine a house (Figure 1). A house consists of a foundation, walls, furnishings, and a roof. Each of these is equally important parts, and if one of them is missing, the rest of the house is rendered nearly useless. At the least, it is no longer considered a house. The furnishings are in some way different: not so much a part of the construction process, as an aspect of the house that comes later. Likewise, benefits will not necessarily be considered a dimension in the process of building participation, but rather a desired aspect to come later, hopefully stemming out of the construction. For this reason it is depicted within the other three dimensions. For the other three types, the decision-making will be pictured as the foundation, an essentially part of laying the rest of the process. The implementation will be thought of as the walls –the major part of building. Lastly, the evaluation will be
intellectualized as the roof: that which caps of the project and likewise protects it. These vertical dimensions of a house, shows the “what” dimension of participation.

Further, our picture has depth. This is how empowering the participation is: the how dimension. Uphoff referred to this as degree of empowerment (1977). The width of the house captures the breadth of the base of stakeholders –how many and what type of people participate. Analysis will be done to see if differences within these stakeholders correlate with greater levels of participation. It is assumed that the more participants, the better. This is so for all the dimensions of the house: the higher or wider or deeper the house, the more desirable.

This study will not be comparing with other projects, but rather describing within one house: within one project. It will not be comparing to a normative structure of how the house should be built but rather the completeness to which the house is utilized. The dimensions above give you an outline of the house--the potential participation--but this study will measure how many people participate, in how many different activities, with what frequency; not simply what is made available to them (the outline of the house).

However, the framework is formed assuming that the bigger the potential participation, the more benefits a project could potentially hold. Additionally, the more participation achieved, we hypothesize; the greater will be the realized benefits. What type of houses to build is beyond the scope of this study; it will focus on determining the completeness of participation that occurs within the project. In this framework, the larger the inside of this house, and the more completely it is built, the better it is. One can
imagine that if this house were lacking in many of its dimensions, the project would be conceptualized as poor in regard to participation.

Figure 1: Conceptualization of participation
VIII: Chapter summary

In conclusion, it appears that communication, and the associated technologies, are one of the most promising methods, past or present, to be able to facilitate participation. It seems that this new paradigm might be a way that the problems of participation may be better addressed, for history has shown that attempts at implementing participation are not always successful, though the need for participation has been widely recognized.

It is important to conduct this study, because it is uncertain the level and extent of participation that is occurring on the field. Particularly in Tanzania little is known about recent attempts at participation. This study benefit the project by helping project leaders to improve the participation in an informed manner, by identifying potential constraints, and by exploring areas where communication might be used to better facilitate participation. Not only will the study benefit the project, but the MIS will also serve as a case study to show more specifically what is meant when government officers say that participation is occurring and what problems participation on the field might be experiencing.
Chapter 3: Methodology of the Research

This chapter outlays the procedures used in this research. It describes the steps in research design, selecting and describing the project area, the population of the study and the sampling procedures, the instrumentation of the study, the data collection procedures, the data analysis, and the definition of variables. This chapter outlines these steps in the following seven sections.

Research Preparation

In preparation for this research, the development problem was identified, namely, the problem of effectively promoting participation. Further, within the literature, it was identified that there was little research describing participation, even fewer of which were quantitative studies. Thus, a quantitative study was chosen to better understand the intricacies of participation and to help address the development problem of effectively implementing participation. The study was aimed at an extensive description of the participation of farmers in the Mbalangwe Irrigation Scheme.

To measure participation cross-sectional, descriptive, quantitative, survey research was selected. A structured interview schedule was utilized. It was evident that a survey or interview would be necessary to effectively measure the complex notion of participation and incorporate all forms of farmers’ participation. A structured interview was necessary to wholly and specifically describe the different aspects of participation. In
particular, an interview schedule was selected to be able to gather such specific data and encompass both literate and illiterate farmers. This survey type does have some limitations, in that it can bias respondents since their answers are not completely anonymous, and that it can introduce error between observers if multiple observers are used. However, in our case it was found to be advantageous, not only being able to survey illiterate farmers in the target population, but also allowing trained researchers to fill in the data as the respondent answered the questions. This helped to minimize any error that might have been encountered in translation or any misunderstanding of the questions that could have happened in the low-education target population.

**Exemption granted from the Institutional Review Board**

This proposed study was deemed to be exempt from review of the Institutional Review Board [IRB]. Exception was granted under category two, on July 7th 2013. The protocol number was 2013E0263. (See Appendix A.)

**Project Area**

This study aimed to assess the participation that was occurring at the project level by surveying farmers in a case study of agricultural development in Morogoro Rural District [MRD]. MRD is one of six districts in Morogoro Region. Initial objectives and a survey had been developed for assessing participation in MRD, but a feasibility study on the field revealed that the survey should be narrowed to one case study.

Numerous interviews were conducted at the District Agricultural Development Office, the central place for all agricultural development projects in Morogoro Rural District, in order to select a recent project with a reputation of being participatory. The
Mbalangwe Irrigation Scheme [MIS] was identified as having the best reputation for participation and also a feasible place to perform a case study.

*Location of study*

Morogoro Rural District is divided administratively into 6 divisions, 25 wards, and 132 villages. The MIS is located near Mbalangwe, a sub-village of the village of Tununguo, within the ward of Tununguo, and in the division Ngerengere. The village of Tununguo has 590 households with 2,435 people of which 1319 are women and 1116 are men (United Republic of Tanzania Population and Housing Census, 2002; MZITSU, 2008). The largest ethnic groups in the area are Kutu and Lugulu; Swahili is widely spoken as a primary language for communication and business.

The area is traditionally known for rain-fed agriculture, although a few innovative farmers had already practiced local irrigation (MZITSU, 2008). The main crop is rice, and the main constraint to growth is water (MZITSU, 2008).

*The project*

The Mbalangwe Irrigation Scheme is a project undertaken by the District Agricultural Development Office [DADO] in Morogoro Rural District in correlation with the Tanzanian government’s District Agricultural Development Program (DADP). It was started in 2007 and is aimed at providing water by gravity to fields in the area.

The project area can be accessed by a 9km-long-road that takes off from the Morogoro-Mvuha road 79 km south of Morogoro municipality; this correlates to the UTM coordinates of (375652, 0375652) East and (9214610, 9214874) North (MZITSU, 2008). The area is indicated in the map of MRD in Figure 2.
Figure 2: Project area in Mbalangwe, Morogoro Rural District, Tanzania

The project targets to reach 500 hectares, but currently only 230 hectares are irrigated. One hundred meters of lined canal have been constructed, along with 650 meters of unlined canal. According to the DADO, potential beneficiaries number more
than 3,500, mainly in Mbalangwe, and with another 25% in the nearby village of Msonge. The main objective of the project is to “increase farmer’s income and food security at the household level” (DIDT, 2009).

**Project structure**

In order to promote farmer participation, an irrigator’s organization [IO] was formed. It was registered with the Tanzania government on October 20th, 2008, and entitled Tutashinda Mbalangwe Irrigation (TUMBAI) (Pyumpa, 2012). As of 2012, there were 219 members: 143 men and 76 women. Also, a project committee was formed on November 20th, 2012, following government protocol.

Construction of the irrigation scheme began April 9th, 2013, (Pyumpa, 2012) and continued through the rest of that year. Implementation was largely coordinated by engineers of the DADO, but the farmers were involved in a number of ways.

**Project participation**

The goal of participation was evident in this project. The project was based on a participatory action plan identifying the opportunities and obstacles to development in the villages throughout the surrounding area. Further, three different feasibility studies performed by the DADO included farmer interviews, and a participatory process was used to include the farmers in the scheme’s design. Also, members of the project committee were asked to procure materials for the project; members of the IO were asked to participate in the supply of aggregate and sand, to participate in the creation of the slabs to line the channel and participate in the construction process (Pyumpa, 2012).
Despite these efforts, the lack of farmer participation had been cited as the main challenge to the project (Pyumpa, 2012). As of October 2013, no studies had yet been done to evaluate participation in the MIS, nor had any measures been developed for evaluation.

Developing a comprehensive list of opportunities

In order to accomplish the objectives of this study, a comprehensive list of participation opportunities for members of the Irrigators’ Organization was created. These opportunities were organized by type, and subtypes, both published by Norman Uphoff and John Cohen (1977). His definition was used in developing this study, and his outlined framework of participation was used by the researcher, in an effort to capture all different items or activities within the MIS that might constitute opportunities for member participation. Leaders at the project, village and district level were asked for any opportunities to participate in accordance with each sub-type outlined by Uphoff. The identified opportunities are outlined in Appendix A.

Population and Sampling

The population for this study consisted of member farmers in the Irrigators’ Organization of the Mbalangwe Irrigation Scheme. The member roster was then abridged to only those that lived within one day’s travel of the center of the scheme at the time of the study. This was not only done for logistical purposes, but also in order to identify the potentially most active participants (recognizing that those who had moved or lived further away would not be able to participate as actively). Initially, there were 213 members, but after purging the roster from those that were known to have died, or lived
more than 20 kilometers away (according to the extension agent and the Irrigators’ Organization secretary) there were 136 members. Later on, it was discovered that some of these members had also moved away from the scheme. This brought our population to 127 members. Members were those who desired to join the Irrigators Organization in Mbalangwe, which could be any adult grain farmer, male or female. The demographic characteristics of these members were unknown before the time of the study.

Sample

Since the target population was of a similar size to the estimated sample size for the budget of this study, a census survey was chosen. This was done because any form of sampling can create sampling error, but for this study, target population within the MIS was a manageable number to survey.

Instrumentation

A survey was developed for this study to assess participation in Morogoro Rural District and later in the Mbalangwe Irrigation Scheme. It was designed to describe different dimensions of participation described by Norman Uphoff (1977) and meet the objectives of this study, namely, to describe: 1) the demographic statistics of the members in the Mbalangwe Irrigation Scheme, 2) the frequency of member participation within different opportunities for participation in the MIS, 3) the depth of participation in the MIS, 4) the communicative means of the Mbalangwe Irrigation Scheme, 5) the benefits of participation in the project, and 6) potential constraints to participation in the Mbalangwe Irrigation Scheme.
The resultant survey is divided into six sections, A through F, which correspond to each of the objectives 1 through 6. Section A covers objective 1; section B covers objectives 2, and so forth. The following 6 sections explain how the objectives are captured. A comprehensive list of opportunities for participation was compiled with the leaders of the project, the IO, and at the district office; these are listed, organized by Uphoff’s framework, in Appendix B. Appendix C contains the instrument used in this study.

*Demographics of Irrigators’ Organization members*

For this first objective of describing the demographic characteristics of members in the IO, Section A was developed. It captures a wide scope of demographic characteristics relevant to rural farmers and was designed largely by an expert on Africa, Dr. Robert Agungga, the director of OSU Center African Studies. Some questions of note are number 11, about speaking other languages which was later combined with their literacy to create a communication index; 14 about the livestock they own, which was to find a total net worth of livestock; 16 about the innovations they have adopted, noting that different farmers can have varying levels of innovation (Rogers, 1962); number 17 regarding their possessions, which was used to find the amount of wealth stored in the possessions they owned; 19 –voting before in a national election-- which is relevant because political participation is often correlated to participation in international development (Hickey and Mohan, 2004; Cornwall, 2008); and lastly, question number 21 was used to establish food security. See the data analysis section for a further description of the variables developed.
Frequency of participation in different opportunities

After the opportunities for participation had been identified, it was straightforward to measure the frequency of participation for each of the opportunities. This was the purpose of section B in the instrument. For each opportunity it was asked of the participants how many times they had participated in each opportunity. If it was an event that was known to only have occurred once, then the respondent was simply asked if they had or had not participated.

These questions are numbered 1-45 in section B. The numbers correspond to the order of opportunities in the comprehensive list in Appendix B. Appendix B was organized by types of participation (Uphoff, 1977), and thus the survey reflects this same order. Subheadings are shown to indicate questions related to decision-making (1-21), those related to implementation (22-39), and finally questions regarding opportunities for participation in evaluation (40-45).

Degree of empowerment of participation in the MIS

In Section C, questions were asked to determine the degree of empowerment as developed by Uphoff (1977). These questions were developed based on Uphoff’s descriptors for categorizations of degrees of empowerment, from “no power” to “extensive power” for each different type of participation (Figure 3). The appropriate descriptions were listed, customized slightly to reflect the specifics for each opportunity, and respondents were asked to agree to that which most accurately reflected their experience for that opportunity or group of opportunities.
Figure 3: Degree of empowerment of participation by type (Uphoff, 1977)

For all the questions regarding degree of empowerment in implementation opportunities, the recipients were asked if the opportunity was mandatory or not. This was because the description of different categories for this type of participation was based solely on control over decision to participate and control over resources. Since the control for the resources was already known for each opportunity, this approach was simpler and less time-consuming for the respondent, and the classifications could still be made.

There were two exceptions to Uphoff’s typology. Question C4 in decision-making used the descriptors for implementation, since they were more relevant to the decision making of this opportunity. Also question C13, in the implementation section, used the
descriptors for decision-making, because the decision-laden nature of these participation opportunities (numbers 34-37) made it more appropriate to use degree of empowerment regarding decision-making.

In total, section C had 17 questions. These are labeled by decision-making (1-7), implementation (8-14) and evaluation (15-17). One question regarding degree of empowerment was typically asked for each similar group of opportunities; this often correlated to one of the sub-subtypes of participation. (Please reference Appendix B for the numbering of participation opportunities [1-45] and for the breakdown and numbering system of sub-subtypes of participation). However, in a number of cases, the groups of opportunities were not similar enough to group together all opportunities within sub-subtype of participation. This was the case often within decision-making. Question 1 did correlate with sub-subtype I.a.i.; but question 2 described participation opportunities 3-5, question 3 described participation opportunities 6-8, and question 3 described participation opportunities 9-11. Questions 5 described degree of empowerment for opportunities 12-14, and question 6 for 15-17. The last question regarding degree of empowerment in decision-making, question 7, correlated to the degree of empowerment for opportunities 18-21.

For opportunities to participate in implementation there is one question (8-14) for the first six subtypes of participation (II.a.i.-II.a.v. and II.b.i.). The only opportunity for which degree of empowerment was not asked was that of participation in the irrigators’ organization. This was such a large item that a few questions could not accurately describe the degree of empowerment within the whole organization.
Degree of empowerment in evaluation was established for opportunities 40-43. Question 15 encompasses both opportunities 40 and 43, and questions 16 and 17 describe the degree of empowerment in opportunities 41 and 42, respectively.

**Describing the means of communication in the MIS**

The aim of section D was to describe the flow of information though the IO regarding participation. Respondents were asked how they found out about the opportunity, or who facilitated the opportunity, for each of the major opportunities, or major group of opportunities. These included: the irrigation scheme, the irrigators’ organization, the creation of opportunities and obstacles list, the feasibility studies, the village mapping, the group-designing of the scheme, the brining of building materials, the repair activities, the necessary cleaning times, feedback given to district leaders, feedback given to village leaders, and an evaluation survey. These simple, short-answer questions were asked in Section B alongside the questions for frequency, and depth of participation for the relevant opportunities to participate.

**Benefits of participation in the MIS**

Section E contained 19 questions related to benefits. Questions 1-8 regard total number of acres farmed and owned –both within and outside the MIS –change in yield, change in price, and change land value. These were asked to be able to calculate net changes in income and asset value.

In order to examine other benefits of participation in the Mbalangwe Irrigation the sub-subtypes of participation as listed by Uphoff, were used to work with the MIS leaders to identify potential benefits for participants. From Uphoff’s framework (1977) there
were identified different kinds of participation in benefits that related to the irrigation scheme. The subtypes of participation within benefits were: material, educational, amenable, personal, and development benefits. After surveying project leaders regarding potential opportunities to benefit within each of these subsections, questions were asked to measure agreement with benefits in each of the specific opportunities identified. These were: instructional trainings, improved gender relations, new road, new bridge, increased confidence, increased power, seeing their role in development, and seeing the efficacy of participation.

**Constraints to participation for members of the IO**

In Section F, nine items were presented to the respondent, who was asked to agree or disagree with them. The majority of these asked them explicitly about a potential constraint to development or asked to see if they held a view that would be known to restraining participation. For example, in the question: “Is participation for men only?” it was not asked if gender was a constraint to development, but rather elicited the view of the subject. Based on the literature, this allowed us to know if this view constrained their development.

**Translation of instrument**

This survey was translated into the most common language of the respondents, Swahili. Ms. Judy Dekayaz—a trained translator who held an international Masters Degree in development, who was a native speaker of Swahili, and who was trained for multiple weeks in this specific study which included the pre-study and survey development—translated the survey from English into Swahili. To control for translation
error, another graduate student, native to speaking Swahili and experienced in survey
research translated the document back to English. The researcher then reviewed with this
second translator to discover any difference. Any discrepancies were explained from the
perspective of translator number two. These were then taken back to the original
translator, who conceded to the alternative translation or explained her perspective to the
lead researcher. The lead researcher then decided any remaining discrepancies. The
responses to the interview schedule were recorded in Swahili, but were later coded or
translated to English by the original translator and reviewed by the researcher.

Content validity

To establish content validity, a panel of experts was used to ensure the original
instrument measured what it purported to study. The selected panel was four in number:
Dr. Robert Agunga, the director of the Center for African Studies at the Ohio State
University; Dr. Bob Birkenholz, Professor of Agricultural and Extension Education at
The Ohio State University; Dr. David Hansen, the Program Manager of the Innovative
Agricultural Research Initiative [iAGRI] in Tanzania; and Mr. Gosbert Shausi, doctoral
candidate and former lecturer in Agriculture Extension at Tanzania’s Sokoine University
of Agriculture. This validated sections A and F of the instrument.

The sections B-E were developed upon recommendation of the in-country
advisor, Dr. Catherine Msuya, Head of the Department of Agricultural Extension and
Education at Sokoine University of Agriculture [SUA], and in consultation with the
American advisor, Dr. Robert Agunga. These were later reviewed for content validity by
Dr. Catherine Msuya and three other researchers at SUA who were most familiar with the MIS.

*Face validity*

Graduate students at the Ohio State University and the University of Iowa reviewed this survey for face validity. After their suggestions were incorporated, graduate students and professors at SUA reviewed it. Finally, it was reviewed for face validity by administering to 10 villagers in the village of Mbalangwe and also to the local extension agent.

*Reliability*

Without a comparable population available in the United States, reliability could not be able to be established before arrival in Tanzania. A pilot test was done with the initial instrument, but time did not allow for a test-retest of the latest instrument. Thus, Cronbach’s alpha was used to establish internal consistency as a measure of reliability for the instrument. All of the questions comprising the possession index, the participation frequency, participation degree of empowerment, participation benefits and participation constrains were measured, and any score over 0.5 was considered reliable as cited by Nunally (1965). Results are reported in Table 1.
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Number of items</th>
<th>Coefficient alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation index</td>
<td>5</td>
<td>.673</td>
</tr>
<tr>
<td>Possession index</td>
<td>10</td>
<td>.646</td>
</tr>
<tr>
<td>Frequency of decision-making participation</td>
<td>21</td>
<td>.803</td>
</tr>
<tr>
<td>Frequency of implementation participation</td>
<td>18</td>
<td>.579</td>
</tr>
<tr>
<td>Frequency of evaluation participation</td>
<td>6</td>
<td>.398</td>
</tr>
<tr>
<td>Frequency of all participation</td>
<td>45</td>
<td>.848</td>
</tr>
<tr>
<td>Degree of empowerment in decision-making</td>
<td>7</td>
<td>.503</td>
</tr>
<tr>
<td>Degree of empowerment in implementation</td>
<td>6</td>
<td>.556</td>
</tr>
<tr>
<td>Degree of empowerment in evaluation</td>
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<td>.902</td>
</tr>
<tr>
<td>Degree of empowerment, overall</td>
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<td>.720</td>
</tr>
<tr>
<td>Channel of decision-making opportunities</td>
<td>4</td>
<td>.951</td>
</tr>
<tr>
<td>Channel of implementation opportunities</td>
<td>6</td>
<td>.981</td>
</tr>
<tr>
<td>Channel of evaluation opportunities</td>
<td>3</td>
<td>.904</td>
</tr>
<tr>
<td>Channel of all opportunities</td>
<td>13</td>
<td>.966</td>
</tr>
</tbody>
</table>

Table 1: Reliability of survey variables

Since the Cronbach’s alpha score for these six items in the frequency of evaluation participation was only .398, thus these were not treated as a single factor.

Overall, for frequency there was a very high correlation (.848), and thus this variable was used for all opportunities or each of the 6 opportunities to evaluate were analyzed individually.

Collection of data

Two different enumerators went to the known residence of every member in the population, and interviews were all conducted at the house of the respondent, done in privacy except for the supervision of the researcher. The local extension agent was hired to help locate the residence of each member and to be the second enumerator. He would transport himself and the other enumerator via motorcycle. If the member was not present at his or her house they, were visited again, up to a total of three times. After three
unsuccessful attempts, the farmer was classified as a non-respondent. One hundred and fourteen of the population were successfully interviewed. This corresponds to a response rate of ninety percent. Upon return from the field, one survey was misplaced, which resulted in a total number of 113 surveys.

*Inter-observer reliability*

The two enumerators were each trained by the researcher. Also, the initial interviews were all conducted with one enumerator performing, the other observing, and the researcher monitoring, in order to establish consistency within different observers. Both enumerators were monitored daily by the researcher, and each night, all three parties together discussed any difficulties or problems with the research.

Data Analysis

Statistical Package for the Social Science [SPSS] and Microsoft Office Excel 2008 were used to analyze and present the data. Analysis is outlined below for each section of the instrument, which is in accordance the six objectives.

*To describe the demographic characteristics of participants in the Mbalangwe Irrigation Scheme*

Four main tables were created to best explain the demographic characteristics of the respondents: one focusing on general characteristics, one looking at education and involvement, the other looking at farming trends, and the last looking at wealth indicators.

For general characteristics, the percent male and female was calculated. Food insecurity (since decreasing this was one of the targets of the MIS) was calculated as a
percent of members who responded as not having enough food for them and their family all year round. Lastly, the average age was calculated.

Educational statistics and other involvement factors included average years of education completed by each respondent. The percent of respondents who responded to being able to speak English were given, and literacy percent was shown, defined as agreeing to ability to both read and write Swahili. Lastly, the percentage was calculated for those respondents who had participated in a national election.

Next was shown the average number of acres that respondents reported to farm, together with an average of the times they had stated being visited on their farm by their extension officer. Lastly was stated the percent of farmers who used different innovations: hybrid seeds, chemical fertilizers, a tractor, recommended spacing, or chemical pesticides.

Finally, a table was created to show wealth indicators. This showed the reported annual income, the value of all livestock reported and the estimated cost of valuable possessions that were indexed. The price of livestock was estimated from research in the country and confirmed by a professor at SUA who was familiar with that area; the same procedure was used to estimate price of possessions. Lastly, a table showed the percentage of people who reported to own: a watch or clock, a motorcycle, access to internet, a radio, a cellphone, a newspaper subscription, a TV, a bank account, a computer, a bicycle, a tractor, a house with tin roof, an automobile, and electricity at home.
To describe the frequency of participation in the different opportunities for participation in the project

As described above, each of the opportunities for participation in the MIS that were discovered were classified and listed in a table in Appendix B. For each of these opportunities, the percentage of members (out of 113) who participated in them at least one time was calculated. Secondly, the average frequency of participation in a given opportunity was reported. This was calculated as the average for those respondents who had participated at least once in that particular activity (excluding those who had not participated). Lastly, the maximum frequency of participation was given. This was the highest amount that any could have or had participated in that particular opportunity.

Also, for each type (decision-making, implementation and evaluation) of participation, an average was given for the number of members that participated. This was then divided by the 113 to get the average percentage of participation for that group of opportunities. Also, all of the average frequencies for given opportunities were averaged within a group to get an average value for frequency of participation. The same was done for maximum.

Lastly, at the bottom of the table, totals were calculated for each of the types of participation opportunities. For number of participants, this was calculated for unique members who had participated in at least one opportunity within that type of participation; in other words, the maximum number of participants was 113. The total percentage was then calculated by taking the total number of participants for a given type and dividing it by 113. The average frequency of participation total was calculated by
dividing the number of participation occurrences (the total number times any member had engaged in any opportunity within a given type) and then dividing it by the total number of members who participated for that type of participation. The same process was used to calculate the totals for the overall project, simply looking at all of the grouped opportunities together.

To describe the degree of empowerment of participation in the MIS

The average degree of empowerment of the participation opportunities was based on Uphoff’s six different categories (Figure 3). His categories were specified for each unique opportunity, and respondents chose which one they agreed with most. The following ten groupings of participation opportunities were surveyed in this manner for depth of participation: forming the list of obstacles and opportunities in Mbalangwe, the feasibility studies, the initial planning meetings, the design and mapping of the scheme, the monthly meetings, the quarterly meetings, the opportunities related to structuring the irrigators’ organization, giving feedback to district leaders, giving feedback to village leaders, and evaluation surveys.

For some of the implementation activities, it was already known the level of control they had over the resources, and the categorization for implementation opportunities was based only on control over decision to participate and control over resources. The members controlled all of the resources for each of the following opportunities: cleaning opportunities, repair opportunities, paying member fees, bringing materials for construction, and time participating in construction. If a member responded that an opportunity had been mandatory, they received a categorization of “some power”
for that particular opportunity. However, if they responded that it had not been mandatory
they received a categorization of “extensive power” (refer to Figure 3). The only
exception among the implementation opportunities was Irrigation Scheme placement.
Member only had control over some of the resources for this opportunity; thus, they
received a categorization of “moderate power” if they responded that they were able to
choose to have the irrigation scheme; or “potential power” if they stated they could not
choose whether or not the scheme came onto their land.

The above approaches were used to categorize the data for each member; then
frequencies for the categories of degree of empowerment were calculated by opportunity.
Frequencies were then also grouped by type of participation. For this, all of the responses
for a given opportunity (regardless of which respondent it was for or if a given
respondent had or had not responded for every opportunity) were then summed, and a
frequency distribution was given by category for degree of empowerment. The same was
done for the overall project by including all of the opportunities.

To describe the flow of information regarding participation opportunities in the

Mbalangwe Irrigation Scheme

For each of the groups of opportunities surveyed regarding channel of
participation, members were asked as to how they received their information, or how a
given opportunity was facilitated. Most respondents gave one answer, although some
gave more than one. All responses were included.

Different channels were identified, with some being grouped together, such as
village chairman and village executive officer both being grouped as village leaders.
Responses were then tallied for these identified channels within each particular group of participation opportunities. Percentages were then calculated by dividing the total number of responses for a given channel by the total number of responses within a grouping of participation opportunities.

To examine the benefits of participation in the Mbalangwe Irrigation Scheme

Firstly, the change in income per growing season was calculated based on total yield before and after the scheme and on the expected price with and without the scheme. Total yield before the scheme was based on the response of each individual farmer. This was multiplied by the reported total number of acres farmed in order to get expected yield without scheme. To account for changes in Tanzania’s overall price changes (due to better yield and other factors) the average decrease in price (18,400 TZS) for Morogoro region was subtracted from the average reported price from before the MIS. This gave the expected income without the scheme.

To find the profit with the scheme, the total yield was multiplied by the average reported price received by members for the present year. The total yield was found by multiplying the number of irrigated acres a farmer had by the yield per acre he reported achieving after the MIS, and this was added to the number of acres he farmed outside of the irrigation scheme (when applicable) times the yield he reported to achieve before the MIS. This gave the estimated yield with the MIS. This yield was multiplied by the average reported price per bag of rice after the MIS (105 farmers had reported a decrease in price, citing the increased yields) to get the estimated income with the MIS. The
change in income was then calculated by subtracting the expected income without the scheme from the estimated income with the MIS.

Increase in capital value was calculated by multiplying the total number of acres owned within the irrigation scheme times the average reported increase in price per acre after the MIS. Conversions from Tanzanian shillings [TZS] to U.S. dollars [USD] used the rate reported by the UN treasury for the month at the end of the last harvest season, May 2013. This rate was 1628.0 TZS per USD.

The change in income was done for all members, and then broken into average change in income for all men and average change in income for all women. Finally, the change in income was analyzed for significant correlations with any of the ten major variables from section A, one’s role in the IO, and one’s average relative frequency of participation. This was found by calculating the relative frequency (frequency divided by maximum possible participations) of each of the participation opportunities, then averaging all 45 of them.

To describe potential constraints to participation for members of the Mbalangwe Irrigation Scheme

Constraints are presented as the percentage of people who agreed or disagreed with items outlined as potential constraints to participation. Lastly, of the thirty-five people who responded to the open-ended question regarding constraints, each of these responses was then grouped. Example of grouping includes being “too old,” not having capability, and health issues all being coded as “health problems.” They were then listed
by grouping in a table showing the percentage of the thirty-five people that mentioned each item.

**Definition of variables**

**Income**: Total annual household income

**Language index**: (Literacy in Swahili + fluency in English + fluency in a tribal language)/3

**Innovation index**: the addition or the adoption of four different farming technologies—hybrid seeds, chemical fertilizers, recommended spacing, and use of tractor—weighted in relation to the innovativeness of each technology relative to that culture. This was achieved by finding the proportion of the people who had adopted that technology, taking the inverse of that, and using that as the weighting factor. In this manner, each of these four technologies were weighted on a scale between 0 and 1.

**Livestock wealth**: equal to the total number of each type livestock owned times the average price for each respective species

**Possession index**: Percentage of surveyed possession which were owned, of those surveyed in question A17, multiplied by their current worth in Tanzanian shillings

**Past political participation**: Whether respondent has voted in any previous national election

**Extension Involvement**: The number of times the extension officer had visited in the last year

**Opportunity for participation**: Any event related to the MIS that facilitates members impacting the decision-making, implementation, or evaluations of the project
Activity of participation: A specific manner in which a participant may engage in an opportunity for participation if there is more than one known manner

Frequency of participation: The number of discrete times a member engaged in a certain participation opportunity

Relative frequency of participation: The number of discrete times a member engaged in a certain participation opportunity, divided by the greatest possible number of times to engage or largest recorded frequency if this greatest possible participation is not known for that particular participation activity or opportunity

Position held in the Irrigator Organization: The office held within the whole organization, on one of the committees, or being a member on one of the committee. This could be in general: project leader, committee leader, or committee member.
Chapter 4: Results of the Study

The results of the study are listed in six sections by objective with appropriate illustrations and some discussion. Section seven displays key findings. Detailed description of the analysis process is presented in Chapter 3. Further discussion of the results is found in Chapter 5.

To describe the demographic characteristics of participants in the MIS

The demographic characteristics of the members of the Irrigators’ Organization in the MIS were described in a number of ways. Those listed here are the general characteristics, followed by educational statistics, agricultural factors, and finally wealth indicators.

*General demographic statistics:*

The MIS was comprised of 54% males and 46% females. Food insecure members totaled 54% of the population, and 56% had access to clean water. The average age was 48.5 years.
<table>
<thead>
<tr>
<th>Characteristic (n=113)</th>
<th>Percent of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54%</td>
</tr>
<tr>
<td>Female</td>
<td>46%</td>
</tr>
<tr>
<td>Food insecure</td>
<td>49%</td>
</tr>
<tr>
<td>Clean Water Access</td>
<td>56%</td>
</tr>
<tr>
<td>Age (years)</td>
<td>M=48.5, SD=14.6</td>
</tr>
</tbody>
</table>

Table 2: General demographics

*Educational statistics and other involvement factors*

Respondents completed an average of only 4.5 years of education. However, there was a relatively large range in the characteristics of respondents. This is shown in Figure 4. This also shows that almost one-third of members had not had any education.

![Years of education](image_url)

*Figure 4: Average level of education completed*
Table 3 shows the other characteristics some other educational statistics. Only 3.5% of respondents had ever voted in a national election.

<table>
<thead>
<tr>
<th>Characteristic (n=113)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of education</td>
<td>M=4.5, SD=3.597</td>
</tr>
<tr>
<td>Speak English</td>
<td>4.4%</td>
</tr>
<tr>
<td>Literate in Swahili</td>
<td>66%</td>
</tr>
<tr>
<td>Participated in national election</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

Table 3: Demographics of education and involvement

3. Farming characteristics

The average respondent farmed just over three acres and was visited by the extension agent 2.5 times in the last year. However, the variation was great in these visitations. Figure 5 shows that over half of the farmers had not been visited by the extension agent in the last year.
Of the innovations surveyed, the most commonly used was chemical pesticides (97.3%) followed by recommended spacing (37.2%).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of acres farmed</td>
<td>( M=3.03, \ SD=1.923 )</td>
</tr>
<tr>
<td>Number of times visited by extension officer</td>
<td>( M=2.5, \ SD=5.073 )</td>
</tr>
<tr>
<td>Hybrid Seeds</td>
<td>37.2 %</td>
</tr>
<tr>
<td>Chemical Fertilizers</td>
<td>43.4 %</td>
</tr>
<tr>
<td>Tractor</td>
<td>19.5 %</td>
</tr>
<tr>
<td>Recommended Spacing</td>
<td>56.6 %</td>
</tr>
<tr>
<td>Chemical Pesticides</td>
<td>97.3 %</td>
</tr>
</tbody>
</table>

Table 4: Farming characteristics (n=113)
Wealth indicators

The reported annual income had a very wide range of almost 10,000,000 Tanzanian shilling (TZS). As Figure 6 shows, 60% of respondents made between 0 and 67,000 TZS per year. A large deviation was also present in the value of possessions and value of livestock (Table 5). Their distributions resembled that of annual income.

Figure 6: Average annual income
Table 5: Wealth indicators

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Income (TZS)</strong></td>
<td>992,364</td>
<td>1,718,226</td>
</tr>
<tr>
<td><strong>Annual Income (USD)</strong></td>
<td>$610</td>
<td>$1,055</td>
</tr>
<tr>
<td><strong>Livestock Wealth (USD)</strong></td>
<td>$82</td>
<td>$181</td>
</tr>
<tr>
<td><strong>Possession Wealth (USD)</strong></td>
<td>$334</td>
<td>$580</td>
</tr>
</tbody>
</table>

Table 6 details the possession of the items surveyed. The most commonly owned items were radios and cell phones, owned by 74.3% and 53.1% of respondents, respectively.

<table>
<thead>
<tr>
<th>Item of value (n=113)</th>
<th>Respondents who owned (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>74.3</td>
</tr>
<tr>
<td>Cell Phone</td>
<td>53.1</td>
</tr>
<tr>
<td>Tin Roof</td>
<td>45.1</td>
</tr>
<tr>
<td>Bicycle</td>
<td>44.2</td>
</tr>
<tr>
<td>Clock</td>
<td>23.0</td>
</tr>
<tr>
<td>Bank Account</td>
<td>10.6</td>
</tr>
<tr>
<td>Television</td>
<td>8.0</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>7.1</td>
</tr>
<tr>
<td>Electric</td>
<td>3.5</td>
</tr>
<tr>
<td>Computer</td>
<td>1.8</td>
</tr>
<tr>
<td>Internet Access</td>
<td>0</td>
</tr>
<tr>
<td>Newspaper Subscription</td>
<td>0</td>
</tr>
<tr>
<td>Automobile</td>
<td>0</td>
</tr>
<tr>
<td>Tractor</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 6: Possessions of value
To describe the frequency of participation in the different opportunities for participation in the project

Tables 7-9 show the percentage of members who engaged in each different opportunity for participation at least once, and the frequency with which they engaged in that activity. For decision-making opportunities (Table 7), on average, 47.7% of members participated. They engaged these activities on average 3.2 times out of the average of 8.4 possible chances to engage. The most commonly participated in activity was choosing committee members for the IO (96.5%), followed by choosing whether to have the irrigation scheme on one’s land (93.8%), and thirdly by choosing the IO leaders (80.5%). Other opportunities that were engaged in by more than half of members (in order) are: attending quarterly meetings, attending monthly meetings, attending initial meetings, and choosing committee leaders.
<table>
<thead>
<tr>
<th>Name and Number of Participation Opportunity (n=113)</th>
<th>Members who participated</th>
<th>Members participated (%)</th>
<th>Average frequency of participation</th>
<th>Maximum frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Creating obstacles/ opportunities list</td>
<td>28</td>
<td>24.8%</td>
<td>2.6</td>
<td>4</td>
</tr>
<tr>
<td>2. Prioritizing obstacles/ opportunities list</td>
<td>20</td>
<td>17.7%</td>
<td>2.2</td>
<td>6</td>
</tr>
<tr>
<td>3. Agricultural feasibility study</td>
<td>37</td>
<td>32.7%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>4. Environmental feasibility study</td>
<td>42</td>
<td>37.2%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>5. Economic feasibility study</td>
<td>39</td>
<td>34.5%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>6. Attending initial meetings</td>
<td>76</td>
<td>67.3%</td>
<td>12.4</td>
<td>20</td>
</tr>
<tr>
<td>7. Voting in initial meetings</td>
<td>52</td>
<td>46.0%</td>
<td>4.9</td>
<td>20</td>
</tr>
<tr>
<td>8. Voicing in initial meetings</td>
<td>45</td>
<td>39.8%</td>
<td>4.8</td>
<td>20</td>
</tr>
<tr>
<td>9. Village mapping</td>
<td>25</td>
<td>22.1%</td>
<td>2.1</td>
<td>7</td>
</tr>
<tr>
<td>10. Participatory design</td>
<td>23</td>
<td>20.4%</td>
<td>4.3</td>
<td>20</td>
</tr>
<tr>
<td>11. Choosing to have irrigation on land</td>
<td>106</td>
<td>93.8%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>12. Attending monthly meetings</td>
<td>81</td>
<td>71.7%</td>
<td>5.8</td>
<td>12</td>
</tr>
<tr>
<td>13. Voting in monthly meetings</td>
<td>56</td>
<td>49.6%</td>
<td>2.2</td>
<td>4</td>
</tr>
<tr>
<td>14. Voicing in monthly meetings</td>
<td>42</td>
<td>37.2%</td>
<td>3.0</td>
<td>12</td>
</tr>
<tr>
<td>15. Attending quarterly meetings</td>
<td>83</td>
<td>73.5%</td>
<td>3.4</td>
<td>11</td>
</tr>
<tr>
<td>16. Voting in quarterly meetings</td>
<td>41</td>
<td>36.3%</td>
<td>2.1</td>
<td>11</td>
</tr>
<tr>
<td>17. Voicing in quarterly meetings</td>
<td>40</td>
<td>35.4%</td>
<td>2.7</td>
<td>11</td>
</tr>
<tr>
<td>18. Drafting constitution</td>
<td>40</td>
<td>35.4%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>19. Choosing IO leaders</td>
<td>91</td>
<td>80.5%</td>
<td>3.0</td>
<td>3</td>
</tr>
<tr>
<td>20. Choosing committee leaders</td>
<td>57</td>
<td>50.4%</td>
<td>4.5</td>
<td>7</td>
</tr>
<tr>
<td>21. Choosing committee members</td>
<td>109</td>
<td>96.5%</td>
<td>1.7</td>
<td>4</td>
</tr>
<tr>
<td><strong>Decision-making average</strong></td>
<td><strong>54.0</strong></td>
<td><strong>47.7%</strong></td>
<td><strong>3.2</strong></td>
<td><strong>8.4</strong></td>
</tr>
</tbody>
</table>

Table 7: Frequency of participation in decision-making opportunities
<table>
<thead>
<tr>
<th>Name and Number of Participation Opportunity (n=113)</th>
<th>Members who participated</th>
<th>Members participated (%)</th>
<th>Average frequency of participation</th>
<th>Maximum frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Bringing sand</td>
<td>81</td>
<td>71.7%</td>
<td>3.6</td>
<td>15</td>
</tr>
<tr>
<td>23. Bringing stone</td>
<td>74</td>
<td>65.5%</td>
<td>3.9</td>
<td>30</td>
</tr>
<tr>
<td>24. Brining water</td>
<td>16</td>
<td>14.2%</td>
<td>5.4</td>
<td>15</td>
</tr>
<tr>
<td>25. Guarding</td>
<td>20</td>
<td>17.7%</td>
<td>41.0</td>
<td>60</td>
</tr>
<tr>
<td>26. Supervising</td>
<td>31</td>
<td>27.4%</td>
<td>9.9</td>
<td>12</td>
</tr>
<tr>
<td>27. Building bunds (days)</td>
<td>19</td>
<td>16.8%</td>
<td>9.4</td>
<td>90</td>
</tr>
<tr>
<td>28. Water use fees</td>
<td>88</td>
<td>77.9%</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>29. Annual member dues</td>
<td>99</td>
<td>87.6%</td>
<td>3.5</td>
<td>6</td>
</tr>
<tr>
<td>30. Brining repair materials</td>
<td>47</td>
<td>41.6%</td>
<td>4.8</td>
<td>25</td>
</tr>
<tr>
<td>31. Times repairing</td>
<td>42</td>
<td>37.2%</td>
<td>9.3</td>
<td>60</td>
</tr>
<tr>
<td>32. Tertiary canal cleaning</td>
<td>80</td>
<td>70.8%</td>
<td>3.5</td>
<td>12</td>
</tr>
<tr>
<td>33. Main canal cleaning</td>
<td>87</td>
<td>77.0%</td>
<td>3.3</td>
<td>7</td>
</tr>
<tr>
<td>34. Leader of IO</td>
<td>6</td>
<td>5.3%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>35. Leader of committee</td>
<td>9</td>
<td>8.0%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>36. Member of committee</td>
<td>29</td>
<td>25.7%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>37. Employed by contractor</td>
<td>11</td>
<td>9.7%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>38. Member of IO</td>
<td>107</td>
<td>94.7%</td>
<td>5.0</td>
<td>6</td>
</tr>
<tr>
<td>39. Scheme irrigate your land (acres)</td>
<td>84</td>
<td>74.3%</td>
<td>2.7</td>
<td>13</td>
</tr>
<tr>
<td><strong>Implementation average</strong></td>
<td></td>
<td><strong>51.7</strong></td>
<td><strong>45.7%</strong></td>
<td><strong>6.3</strong></td>
</tr>
</tbody>
</table>

Table 8: Frequency of participation in implementation opportunities

For the 18 different implementation opportunities (Table 8), 45.7% of members participated. They engaged in these activities on average 6.3 times out of the average of
20.1 possible chances to engage. The most commonly participated in activity was membership in the Irrigators’ Organization (94.7%), followed by the paying of member dues (87.6%), and thirdly by the paying of water use fees (77.9%).

Other opportunities that were engaged in by over 65% of members were (in order): main canal cleaning, choosing to have the scheme irrigate your land, tertiary canal cleaning, bringing sand, and brining stone.

<table>
<thead>
<tr>
<th>Name and Number of Participation Opportunity (n=113)</th>
<th>Members who participated</th>
<th>Members participated (%)</th>
<th>Average frequency of participation</th>
<th>Maximum frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>40. Feedback to district leaders</td>
<td>11</td>
<td>9.7%</td>
<td>9.9</td>
<td>60</td>
</tr>
<tr>
<td>41. Feedback to IO leaders</td>
<td>34</td>
<td>30.1%</td>
<td>3.4</td>
<td>16</td>
</tr>
<tr>
<td>42. Evaluation survey</td>
<td>25</td>
<td>22.1%</td>
<td>1.5</td>
<td>2</td>
</tr>
<tr>
<td>43. Indirect district feedback</td>
<td>5</td>
<td>4.4%</td>
<td>3.6</td>
<td>8</td>
</tr>
<tr>
<td>44. Helping to define success</td>
<td>29</td>
<td>25.7%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>45. Helping to set goals</td>
<td>32</td>
<td>28.3%</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>Evaluation average</td>
<td></td>
<td>22.7</td>
<td>20.1%</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Table 9: Frequency of participation in evaluation opportunities

For the six different evaluation opportunities (Table 9), participants engaged in them on average 3.4 times out of the average of 14.7 possible chances to engage. The most commonly participated activity was feedback to the Irrigators’ Organization leaders (30.1%),
Twenty-five members (22.1%) filled out the evaluation survey. For feedback to district leaders, only 11 did so, and the average frequency of those 11 members (9.9) was much less than the member who gave the most amount of feedback (60). Only five members gave indirect feedback to district leaders.

On average it was found that 20.1% of members participated in evaluation activities. However, since the Cronbach’s alpha score for these six items was only .398, thus this cannot be treated as a single factor.

Overall, all respondents engaged in at least one opportunity for participation, and respondents engaged in a participation activity an average of 7.1 times. This was out of a total possible 626 times. For the participation activities overall, 43% of members engaged them on average. All opportunities combined averaged 14 maximum numbers of times to participate, and members, on average, engage in these 4.4 times.

To describe the degree of empowerment of participation in the MIS

In the Mbalangwe Irrigation Scheme, the most common degree of empowerment was that of “some power.” This encompassed 51.3% of groups of participation opportunities for which members responded. The second most common overall was “moderate power” at 15.7%. Third and fourthly were “significant power” and “extensive power” at 14.7% and 12.3%, respectively. Potential power was the second lowest at 5.2% and “No power” was chosen for less than 1% of responses. (See Table 10.)

Decision-making opportunities were most commonly scored for “significant power” (34.7%) and then “some power” (32.1%), while implementation opportunities had a ranking of first “some power” then “extensive power” and thirdly “moderate
power.” Lastly, for evaluation opportunities, classification as “significant power” was most common, followed by “moderate power” and then by “some power.”

The “some power” category is the highest category for eight of the 16 groups of participation opportunities. Five of these are for implementation opportunities, and this is the only place besides the overall scheme where “some power” reflects 50% of responses.

Lastly, six of the groups of opportunities scored highest in “significant power.” In order of highest responses in this category are, obstacles/opportunities list, feasibility studies, district feedback, operational decisions, the evaluation survey, and village feedback.
Table 10: Categorizations or empowerment by participation types and participation opportunities

*In some cases N is lower because there were only a certain number of people who were qualified to respond regarding the degree of empowerment, i.e. those who had actually participated in that particular group of opportunities. For decision-making, implementation, evaluation, and overall, the N correlated to the total number of discrete respondents.
All of the meetings scored highest in the “some power” category. Additionally, all of the opportunities held and facilitated only at the local level, except for village feedback, were mostly ranked as “some power.”

Repair labor, time spent in construction, and village mapping had a high percent of responses in the highest category, “extensive power,” as compared to the other opportunities.

To describe the flow of information regarding participation opportunities in the Mbalangwe Irrigation Scheme.

For each of the 13 groups of opportunities listed in Table 11, members were asked as to how they received their information, or how the opportunity was facilitated. The project chairman was most often the facilitator of information. Not only was he the most frequent distributor overall, but he also was the reported channel of information for each type of participation and all of the 13 opportunities for participation except 2. These two exceptions were village mapping, where the villagers themselves were the highest facilitators, and the payment of fees, in which the project secretary passed on this information 30% of the time. For the participatory design, the project chair and the district officers each passed along the information to 29% of respondents.

The second most common channel of communication for decision-making opportunities came through village leaders, at 13%. For implementation opportunities, the second most used channel was other project leaders who were utilized 17% of occurrences. For evaluation opportunities, the project secretary was the second-most
commonly used facilitator. Overall, the second most commonly used channel of information were other project leaders (16%) followed by the project secretary (14%), the Irrigators’ Organization meetings (6%), committee members (5%), district officers (4%), and self or group discovery (4%). All the other eight mentioned channels were utilized less than 4% of the time.

The frequencies of the different channels had a high degree of internal consistency. Combining all thirteen opportunities for forming the overall channel frequencies yielded a Cronbach’s alpha score of .966.
Table 11: Relative frequency of channel used, by participation opportunities

<table>
<thead>
<tr>
<th>Channel Used</th>
<th>Overall</th>
<th>Decision-making</th>
<th>Implementation</th>
<th>Evaluation</th>
<th>Opportunities/obstacles list</th>
<th>Feasibility studies</th>
<th>Village mapping</th>
<th>Participatory design</th>
<th>Bringing construction materials</th>
<th>Repair labor</th>
<th>Repair materials</th>
<th>Cleaning</th>
<th>Paying fees</th>
<th>Irrigation scheme</th>
<th>Irrigators' organization</th>
<th>Local project feedback</th>
<th>Evaluation survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of responses</td>
<td>877</td>
<td>114</td>
<td>684</td>
<td>79</td>
<td>25</td>
<td>39</td>
<td>33</td>
<td>17</td>
<td>101</td>
<td>57</td>
<td>64</td>
<td>110</td>
<td>121</td>
<td>116</td>
<td>115</td>
<td>52</td>
<td>27</td>
</tr>
<tr>
<td>Project chairman</td>
<td>43%</td>
<td>30%</td>
<td>45%</td>
<td>44%</td>
<td>24%</td>
<td>44%</td>
<td>18%</td>
<td>29%</td>
<td>43%</td>
<td>40%</td>
<td>38%</td>
<td>33%</td>
<td>28%</td>
<td>61%</td>
<td>67%</td>
<td>42%</td>
<td>48%</td>
</tr>
<tr>
<td>Other project leaders</td>
<td>16%</td>
<td>11%</td>
<td>17%</td>
<td>9%</td>
<td>4%</td>
<td>13%</td>
<td>9%</td>
<td>24%</td>
<td>26%</td>
<td>23%</td>
<td>25%</td>
<td>23%</td>
<td>17%</td>
<td>8%</td>
<td>6%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Project secretary</td>
<td>14%</td>
<td>2%</td>
<td>15%</td>
<td>20%</td>
<td>0%</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
<td>13%</td>
<td>12%</td>
<td>11%</td>
<td>14%</td>
<td>30%</td>
<td>9%</td>
<td>10%</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>IO meeting</td>
<td>6%</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>18%</td>
<td>11%</td>
<td>9%</td>
<td>16%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Committee members</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
<td>3%</td>
<td>16%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>4%</td>
<td>9%</td>
<td>15%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>District officers</td>
<td>4%</td>
<td>11%</td>
<td>2%</td>
<td>11%</td>
<td>8%</td>
<td>5%</td>
<td>12%</td>
<td>29%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Self/group-initiative</td>
<td>4%</td>
<td>11%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>33%</td>
<td>12%</td>
<td>1%</td>
<td>0%</td>
<td>6%</td>
<td>2%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Village leaders</td>
<td>3%</td>
<td>13%</td>
<td>1%</td>
<td>8%</td>
<td>20%</td>
<td>15%</td>
<td>12%</td>
<td>0%</td>
<td>1%</td>
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<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>10%</td>
</tr>
<tr>
<td>District councilmen</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
<td>4%</td>
<td>3%</td>
<td>6%</td>
<td>6%</td>
<td>3%</td>
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<td>0%</td>
<td>3%</td>
<td>4%</td>
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<td>0%</td>
</tr>
<tr>
<td>Extension officer</td>
<td>1%</td>
<td>6%</td>
<td>0%</td>
<td>1%</td>
<td>8%</td>
<td>8%</td>
<td>6%</td>
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<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Subvillage leaders</td>
<td>1%</td>
<td>4%</td>
<td>0%</td>
<td>1%</td>
<td>12%</td>
<td>5%</td>
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<td>1%</td>
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<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Relative or neighbor</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
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<td>0%</td>
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<td>3%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Committee leaders</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<td>2%</td>
<td>0%</td>
<td>0%</td>
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</tr>
<tr>
<td>Announcement</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>4%</td>
<td>0%</td>
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<td>0%</td>
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<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Committee meetings</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<td>0%</td>
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<td>0%</td>
</tr>
</tbody>
</table>

Table 11: Relative frequency of channel used, by participation opportunities
To examine the benefits of participation in the Mbalangwe Irrigation Scheme

The benefits from the MIS were broken into three main categories: the change in profit, the change in capital value, and other perceived benefits as outlined by Uphoff (1977) and listed by the District Agricultural Development Office. Because increased profit was a goal of the MIS, it was analyzed for correlations with participation and a few demographic variables to find which best explained the variance; the most significant factors were described with the Davis’ conventions (Davis, 1990).

*Change in net profit due to irrigated rice yield and rice price.*

The majority (59.3%) of respondents experienced a benefit of increased income, 0.9% (n=1) had a no change in income, but 39.8% of respondents had a decrease in profit from the MIS. Only 15 (13%) of the respondents actually reported a decreased yield, but 98% of members reported a decrease in price.

<table>
<thead>
<tr>
<th></th>
<th>Respondents experiencing increase (%)</th>
<th>Respondents experiencing decrease (%)</th>
<th>Overall average change in profit (TZS)</th>
<th>Overall average change in profit (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change in profit per growing season</strong> (n=113)</td>
<td>59.3</td>
<td>39.8</td>
<td>+ 518,277</td>
<td>+ $318.35</td>
</tr>
<tr>
<td><strong>Males</strong> (n=61)</td>
<td>60.7</td>
<td>37.7</td>
<td>+ 645,107</td>
<td>+ $396.26</td>
</tr>
<tr>
<td><strong>Females</strong> (n=52)</td>
<td>57.7</td>
<td>42.3</td>
<td>+ 369,495</td>
<td>+ $226.96</td>
</tr>
</tbody>
</table>

Table 12: Average change in income per growing season due to yield and price changes
The average change in profit for all farmers was equal to $318.35. On average, the men in the project benefitted $170.70 more per growing season than women did. However, this difference not statistically significant (p=.435). The most significant factor in profit benefit was found to be a member’s relative frequencies of participation. The number of years of education was not found to have a significant correlation. Of the other demographic characteristics surveyed, age and being a leader in the Irrigators’ Organization, were two that were found to have a significant relationship with change in profit.

*Change in capital value*

The calculated change in capital value was an increase for 74.3% of respondents. This yielded an overall change in asset value of over $241 per farmer.

<table>
<thead>
<tr>
<th>Change in land value</th>
<th>Percent members who benefited (%)</th>
<th>Average change per acre (TZS)</th>
<th>Average total change per farmer (USD)</th>
<th>Average total change per farmer (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.3</td>
<td>194,203</td>
<td>+ 393,132</td>
<td>+ $241.28</td>
<td></td>
</tr>
</tbody>
</table>

Table 13: Increase capital due to land value

*Other proposed benefits*

Of the eight other benefits suggested by the District Agricultural Development Office [DADO] (formed as questions in Table 14), 100% of respondents stated a benefit from improved roads. The least percentage of people said they benefitted in interpersonal confidence (60.2%). For benefit from project-related trainings, 61.9% agreed that they benefitted from at least one training, and on average these members found more than two
trainings to be beneficial (M=2.018 for number of beneficial trainings). These along with the other five results are listed in Table 14.

<table>
<thead>
<tr>
<th>Proposed Benefit of MIS (n=113)</th>
<th>Percentage of respondents affirmed this question (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you benefit from any improved roads from this project?</td>
<td>100.0</td>
</tr>
<tr>
<td>Do you benefit from the bridge put in during this project?</td>
<td>97.3</td>
</tr>
<tr>
<td>Did this project show you that participation in development projects is an effective approach to improved well-being?</td>
<td>97.3</td>
</tr>
<tr>
<td>Did this project show you that you have an important role to play in development?</td>
<td>96.5</td>
</tr>
<tr>
<td>Do you feel that men and women get along better now than they did before the project?</td>
<td>85.0</td>
</tr>
<tr>
<td>Has this project increased the power you have within the community?</td>
<td>77.9</td>
</tr>
<tr>
<td>Do you feel any of the trainings connected to this project helped you?</td>
<td>61.9</td>
</tr>
<tr>
<td>Has the project made you feel more confident in your interactions with other people?</td>
<td>60.2</td>
</tr>
</tbody>
</table>

Table 14: Agreement with other proposed benefits in the Mbalangwe Irrigation Scheme

To describe potential constraints to participation for members of the Mbalangwe Irrigation Scheme.

Of the nine constraints surveyed (listed in Table 15), a lack of power was by far the constraint which was most agreed to by respondents. Eighty-two percent agreed with the corresponding statement. Lack of money, discord at meetings, distance to meetings, and lack of education were the second, third, fourth, and fifth highest identified constraints. Percentage of members to agree with these was all between 23 and 36%. The
statement which was by far the least agreed with was that regarding gender. Only one point eight percent of respondents felt that participation is for men only.

<table>
<thead>
<tr>
<th>Proposed Constraint (n=113)</th>
<th>Percentage of respondents who agreed with this statement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am not powerful enough to participate.</td>
<td>82.3</td>
</tr>
<tr>
<td>I don’t have money to participate in development projects.</td>
<td>35.4</td>
</tr>
<tr>
<td>There is always trouble at participatory meetings.</td>
<td>31.0</td>
</tr>
<tr>
<td>Participatory meetings are held too far away from my home.</td>
<td>29.2</td>
</tr>
<tr>
<td>My level of education is too low to participate in development projects.</td>
<td>23.9</td>
</tr>
<tr>
<td>I don’t have the expertise to participate.</td>
<td>15.0</td>
</tr>
<tr>
<td>I don’t have time to participate in development projects.</td>
<td>10.6</td>
</tr>
<tr>
<td>I am not aware of opportunities to participate.</td>
<td>10.6</td>
</tr>
<tr>
<td>Participation in development projects is for men only.</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Table 15: Agreement with potential constraints

Some of the respondents (n=35) list additional items that limited or prevented their participation. Twelve different respondents listed health problems as limiting their participation. Secondly, 7 respondents identified a lack of awareness.
<table>
<thead>
<tr>
<th>Self-Identified Constraint (n=35)</th>
<th>Number of respondents who identified to this as a constraint in the MIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health problems</td>
<td>12</td>
</tr>
<tr>
<td>Lack of awareness</td>
<td>7</td>
</tr>
<tr>
<td>Lack of capacity</td>
<td>5</td>
</tr>
<tr>
<td>Lack of water</td>
<td>3</td>
</tr>
<tr>
<td>Lack of money</td>
<td>2</td>
</tr>
<tr>
<td>Lack of education</td>
<td>2</td>
</tr>
<tr>
<td>Lack of opportunity</td>
<td>2</td>
</tr>
<tr>
<td>Lack of permission</td>
<td>1</td>
</tr>
<tr>
<td>Lack of confidence</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 16: Other constraints identified by respondents

Key findings: Mbalangwe Irrigation Scheme

To describe the demographic characteristics of participants in the Mbalangwe Irrigation Scheme.

• There were almost as many women in the Irrigators’ Organization (52) as there were men (61)
• 32% of members had never attended school and 34% of members were illiterate
• Only 37.2% of respondents use hybrid seeds

To describe the frequency of participation in the different opportunities for participation in the project

• The average participation opportunity was engaged in by 43% of members
• Only 20.1% of respondents engaged in evaluation opportunities
• An opportunity could be engaged in an average of 14.4 times. Members who engaged in an opportunity at least once averaged 4.4 participation occurrences

• Overall a member could have engaged in some participation opportunity 626 times; the average member engaged 78.1 times

To describe the degree of empowerment of participation in the MIS.

• 51.3% of participation occurrences were reported to have “some power”

• Evaluation and decision-making opportunities tended to score more in the “significant power” category, while implementation scored most frequently in the category of “some power”

• Evaluation to district leaders scored much higher in the significant power category than evaluation at the village level

To describe the communicative means of the project

• Overall the project chairman was the most common channel, out of 13 categories, for participants to discover participation opportunities, used 43% of the times.

• The project chairman was used most often for every type of participation and 11 of the 13 groups of opportunities measured.

To examine the benefits of participation in the Mbalangwe Irrigation Scheme

• 59.3% of members experienced an increase in profit per growing season

• 39.8% of members experienced a decrease in profit per growing season

• The overall average change in profit was equivalent to a $318.35 increase

• The increase by men was on average $170.70 greater than that of women
Relative frequency of participation best explained this increased annual income, showing a “substantial correlation” (Davis, 1990).

To describe potential constraints to participation for members of the Mbalangwe Irrigation Scheme

- While the potential constraints were only agreed with by an average of 26.7% of respondents, power was felt as a constraint by 82.3%
- Of the respondents listing additional constraints, 34% referenced health problems and 20% referenced a lack of awareness
- Only 1.8% of respondents felt that participation is for men only
Chapter 5. Discussion, Implications, Recommendations, Conclusions, and Further Research

The purpose of this study was to describe the participation present in the Mbalangwe Irrigation Scheme [MIS]. This study was advanced by six objectives. This chapter will begin with a section discussing the results of the study by objective. Next is a section with the implications of the problem, followed by a section on recommendations for practice, summary conclusions, and further research.

Discussion of the findings from objectives 1-6

Chapter 4 highlighted the results found in this study and gave a list of key findings. This section will discuss these, including some preliminary conclusions.

*To describe the demographic characteristics of members of the MIS*

There were relatively equal male and female membership within the Irrigators’ Organization [IO] of the MIS was a positive sign. Since being a member of the organization was a form of participation in itself, this lends support to the fact that this project had relatively equal access for men and women.

The wide range of educational levels was of concern for promoting participation as this can add to power differentials within a group and can also complicate education trainings or workshops. There is also a wide range of wealth distribution within the members, which can complicate power problems. It was interesting to note that the
percentage of those who had never attended school (32%) was very close to those who could not read and write Swahili (34%).

Hybrid seeds were emphasized in the MIS but only 37.2% of respondents used them. Over 97% of respondents used chemical fertilizers, thus it appears that members are not opposed to innovations. It was discovered that assistance was provided to attain chemical pesticides, and thus it is hypothesized that it is difficult to attain hybrid seeds.

For innovations, it was also interesting to note the prevalence of cell phones. At 53.1% of members, this was higher even than the level of food security (51%).

*To describe the frequency of participation in opportunities to participate*

The relative participation of members in opportunities was not seen to be exceptionally high nor exceptionally low. At 43%, this is a substantial amount. Little data is published on the frequency of participation, although it is known to be a very important component of participation (Uphoff and Cohen, 1977; Uphoff, 1980). Overall, all members engaged in some type of participation opportunity.

However, of concern is the evaluation opportunities, which averaged only 20.1% of members engaging in them. Only 42 members ever engaged in an evaluation opportunity. While this supported the hypothesis that participation in evaluation is often low, it also is very concerning since it is recognized to be an important part of participation (Uphoff, 1977; Bryant, 2008).

For evaluation feedback to the district office, it seemed that some people had much more access to the district leaders than others. One member (a leader in the IO) reported giving feedback 60 times, while the average was 10 times, and this was for only
11 members that gave feedback to district leaders directly. This number is very close to the number of leaders in the IO or of IO committees.

While the frequency of involvement was somewhat positive, the number of times a member engaged in each opportunity was not particularly high. Overall, a member could have engaged in some participation opportunity 626 times, but the average member engaged 78.1 times. The average maximum number of times an opportunity could be engaged was 14.4 times, but members who engaged in an opportunity at least once averaged only 4.44 participation occurrences. This leaves the variable of relative participation to be low in the MIS.

The implementation opportunities offered a higher maximum number of times to engage (20) than other types of participation. With this higher maximum members still engaged about one-third of the available times.

The opportunities that had the highest relative frequency within the MIS were those that were not mandatory (such as supervising, bund-building, etc.). However, these also had much lower total number of participants.

*To describe the degree of empowerment of participation opportunities within the MIS*

The highest reported category of empowerment in the MIS was “some power,” the third lowest category in Uphoff’s conceptualization. Desirable participation is in the upper half or third of most participation scales (Arnstein, 1969). However, it is promising that most decision-making and evaluation opportunities both scored highest in the “significant power” category. Given that the evaluation of development projects is not
often an opportunity that farmers have, they likely feel that this is an empowering experience.

Since decision making is the most often thought of type of participation, it is also sensible that the project was structured to make these opportunities important. It is encouraging that the majority of members who participated (all members participated in at least some decision-making opportunities) felt they had the “right to be informed and make decisions” (Uphoff and Cohen, 1977). Initial decision-making opportunities in particular seemed to lead to “significant power.”

It should be noted that evaluation to district leaders scored much higher in the significant power category than evaluation at the village level. Also, district or village leaders facilitated many of the six groups of opportunities measured for empowerment that scored highest in the category of “significant power.” This tends to make it seem that district leaders might be more empowering as compared to project leaders, at least when it comes to receiving evaluation but also possibly in decision-making opportunities. All IO meetings (initial-planning, monthly and quarterly) scored highest in the “some power” category. One would hope that at least “moderate power” in decision-making could be achieved at these local meetings.

*To describe how information was communicated regarding opportunities to participate in the project*

The project chair was nearly always the one who passed along information regarding participation opportunities to other members. Rarely ever were other channels used. The only time another person communicated more often about an opportunity to
participate was for the paying of fees. In this case it looked like the project secretary may have helped in collecting the water use and/or member fees. This lack of using other means for dissemination, be it announcements, or other committee members, or local grapevines of communications could be limiting the number of people that come to each participation occurrence. Monthly meetings were the place where only 6% of information was communicated regarding participation opportunities. These could be an ideal place for announcements to ease the burden of communication on the project chairman. Also, considering that the extension officer was equipped with a motorcycle, cell phone, and computer, and was a member of the project, and is employed through the same division facilitating the MIS, it was noteworthy that he only facilitated informing members of only 1% of participation opportunities.

To examine the benefits of participation in the MIS

Unfortunately, 40% of members experienced a decrease in annual income due to the MIS. This is presumed to have resulted mostly from the decrease in price of rice (experienced by 98% of respondents) because only 15% of members experienced a decrease in production. The decrease in price appears to be due to the isolated market and difficulty of transportation in the Mbalangwe area. Thus, a significant increase in production resulted in a significant decrease in price (37%). While it is difficult to lay blame since this is not necessarily because of poor execution of the project nor poor participation by members, the interaction of various development factors is something that must be considered when planning a project.
Not all of the members significantly increased their production from the MIS, but those who did were the ones to show an increase in annual income. It is unknown if the market will be able to sustain all of the members increasing production. Thus, one cannot know whether to encourage the production of those who are currently suffering a loss in income from the project. Only a minority of members use hybrid seeds. This highly inhibits the success of rice production in the irrigation scheme. For yields to significantly increase, all farmers must use hybrid seeds.

On average, farmers still had a relatively large increase in income. Fifty-nine percent of members experienced an increase in income. The average change in income (518,277 TZS) was more than half of the average annual income of members, (992,363 TZS).

On average, the men had much more benefit than women in annual income. It is thought this was because men received more increase in yield. Women reported an average increased yield of 7.1 bags per acre, while men reported a yield increase of 10.4 bags per acre. This can be a problem if it leads to an even greater wealth and power distribution to men. However, this difference was later found not to be statistically significant (p=.435).

After analysis for other correlations, the average relative frequency of participation for all opportunities was found to have the strongest correlation, having a “substantial association.” By type, the average relative frequency of participation in implementation opportunities had the highest correlation to increased income, a “substantial association” (Davis, 1990). It is interesting to note that while participation in
implementation opportunities were mostly categorized in the “some power” category, they accounted for the highest amount of variance in the change in income. While they may indeed be the most beneficial type of participation opportunities, this variance could also be due to the fact that there are more implementation opportunities, that they occurred more often, or that more people were involved. All of these facts could lend themselves to a higher correlation value.

“Years of education” was not found to have a significant correlation with increase in annual income. Of the other demographic characteristics surveyed, age and being a leader in the Irrigators’ Organization were two others that both correlated with profit; the older an individual was, the lower the increase in profit. However, both of these variables had only a “low association” (Davis, 1990).

Large average increases in capital value were also found in the study, but these are not nearly as important as the increases in annual income; for, if the MIS does not increase the profit produced by the land the land will not sustain an increased value. The members agreed very highly with the “other benefits” presented. The increased infrastructure resulting from the structure is encouraging, since it may well lead to the improved access to markets that are necessary to help this project succeed. It was also positive that respondents had seen their role in development and the efficacy of development. This points not only to a positive project, but also to effective participation being present in the project.
To describe constraints to participation for members of the MIS

It seemed that power is one of the greatest constraints to participation in the MIS. The most frequent degree of empowerment was lower than desirable; there was a very wide range of income levels and educational levels, and the levels of empowerment were typically lower when interacting with project leaders. Also, it was highly agreed to by member that lack of power constrained their development. While the other eight potential constraints averaged an agreement of only 19.7%, people agreed with lack of power being a constraint to participation 82.3% of the time. Also, improved power relations was the least agreed to benefit to the MIS.

Only a minority of members agreed with the other potential constraints. However, many of the members chose to list health issues as a problem. This is likely due to the mandatory physical labor that is required to be a part of the scheme. Also, lack of awareness was listed by 20% of the members who chose to list additional constraints. This coincides with the relatively limited channels of communication that were used, however, it is hard to conclude if this constraint was felt by many because only 11% of members agreed to it when it had earlier been proposed as a constraint. Also, the increasing presence of cell phones may have large impacts on the ability of farmers to participate.

Implications for Participation

It is not common that almost equal numbers of men and women are enrolled in the IO, that a large number of respondents agreed this project improved gender relations, that there is statistically no significant difference in benefits between men and women,
and that only two members of the MIS agreed participation was for men only. It seems that, at least for this case study, development can continue unhindered by gender, and projects can be done to promote gender-equity. Not only are both genders being reached, but also development projects are reaching a wide range of educational levels, income ranges and ages.

Secondly, participation seems to be present, and it is now much better understood how many members are participating in what type of opportunities. The degree of empowerment of these opportunities is also understood to some level. Participation in evaluation is lacking, as is cited in much development literature (Uphoff & Cohen, 1977; Uphoff, 1980; Cornwall, 2008; Doublah & Sicilima, 1997). The frequency of participation is not extraordinarily high, and the relative frequency of participation is low within the MIS. This could explain why participation is claimed to be present, yet projects eventually fail. It is not enough to have these opportunities if members are engaging in them only rarely. One-time events are important, but it is also important to incorporate long-term, sustained participation: both for empowerment and for sustainability of the project. This is a related critique to the critique by Doublah and Sicilima (1997) in Tanzanian that projects would stop before farmers learned to walk on their own.

Thirdly, while implementation is the type of participation that includes the most opportunities for participation, it was most often the least empowering. This confirmed assumptions by Doublah and Sicilima (1997) referencing their study in Tanzania. These opportunities have the need for the radical empowerment referred to in recent
participation literature (Cooke & Kothari, 2001; Hickey and Mohan, 2004; Leal, 2007).
While this may result in some important activities not getting done, this could also result in greater empowerment.

Fourthly, it appears that communication may have a large role to play in improving participation in development. Communication is underused, as is hypothesized by many (Agunga, 2012), and high-tech communication is not widely used in participation in the MIS. Communication could benefit through media techniques and also training for the use of extension agents for communication, as well as empowerment techniques for local leaders.

While, integrated development has been promoted for decades, it still seems to be lacking in the MIS, where yields have increased, but the markets have been overloaded. Benefits are limited because of this and the limited availability of hybrid seeds. It confirms the view that participation is sometimes viewed as a “magic bullet” (Oakley, 1984).

Lastly, power may be at the source of modern development issues as some have suggested (Cooke & Kothari, 2001; Hickey and Mohan, 2004; Leal, 2007). It seems to differ among members, hinder some from participating fully, not be easily transferable, and be lacking in many development activities. True transfer of power, however, is at the root of sustainable empowerment, which is key to true and sustainable development (Freire, 1969; Sen, 1970).
Recommendations for policy and practice related to the MIS

This approach of equal access to different genders should continue to be encouraged to facilitate improved relations, with the goal of power and benefits eventually being distributed equally to women. Also, the project and district leaders must make sure to communicate information such that it is understandable to all parties, both educated and uneducated, and to avoid favoring any members that are more educated or wealthier, even if done unintentionally. It is also recommended that project leaders improve access of members to hybrid seeds and provide capital assistance when necessary.

It is recommended that project leaders take every step to let people know about each participation opportunity and about every time that it is to occur; this will hopefully improve the frequency of participation and the relative frequency of participation. Further, it is recommended that more projects within implementation be made non-mandatory. These activities led to more empowerment and also solicited participants to participate more frequently. While fewer members participated in the activities that were not mandatory, hopefully active communication can help to assuage this lack. Also, the possibility should be faced that some things will not get done; this leaves power in the hands of the participants to determine what activities they want to accomplish. This may be the radical empowerment insisted upon by participation critics (Cooke & Kothari, 2001; Hickey and Mohan, 2004). Further, opportunities to evaluate the project should be increased. Project and village leaders should take careful note to take evaluations seriously.
Also, it is encouraged that the district leaders conduct training for project and local leaders, focusing on how to empower other participants. Additionally, district leaders should chance to maximize interactions with participants, as participants tend to feel empowered by these.

Members need to be encouraged to attend meetings. Attendance might need to be incentivized; one option is by giving members monetary credit to be used for charging one’s cell phone. Alternatively, leaders should seek to make these meetings more participatory and empowering for all members.

Giving credit for charging cell phones is recommended because cell phones represent a significant manner for improving communication within the MIS. It is recommended that IO leaders compile a list of phone numbers of members, and that they explore funding opportunities for this money to help members charge their cell phones if they are used partially in conjunction with this development project. Lastly, if possible, the extension officer should be utilized more often in facilitating communication for the MIS.

Also, leaders need to work with those whose yields have not increased so as to identify the cause and to train them or empower them in deficient areas. Also, these leaders should make sure to work with women in trainings to help their yields increase at the same rate as those of men. Marketing opportunities should be sought for rice to help restore the price. Markets might be solicited by indicating improved roads, improved bridge, and higher supply--all of which can help to support a better market.
Finally, a viable solution should be sought for those that suffer from health problems, so they are able to participate. This can include adjusting their mandatory activities from something physically demanding, such as the hauling of sand or gravel, to something that can be performed more easily, such as supervising construction or guarding materials.

Conclusions on the Participation in the MIS

The Mbalangwe Irrigation Scheme had good cross-gender interactions. The IO consisted of nearly equal parts male and female; rarely did anyone think participation was only for men, and many respondents reported that this project had actually improved relations between men and women.

The wide educational differences could possibly account for some of the power differences or constraints within the community, although the level of education is not highly correlated to benefits or to participation. It is more likely related to wide differences in income.

Overall, it is clear that many people are involved in this development project and are willing to get involved. However, the relative participation in projects is low, that is, people participate in a given activity much fewer than the maximum number of times. This is unfortunate since relative participation correlates highly with benefits.

District interactions with members are empowering, particularly in initial planning stages. Evaluation was also a highly empowering activity, more so when giving feedback to the district level than when giving feedback to local leaders. Unfortunately, this interaction at the district level seems limited to few individuals within the scheme.
Communication is less than optimally utilized in this project. The burden of communication to members rests largely on the project chairman. Distributing this burden to others involved, including the utilization of local extension officers, and the use of technology, could improve participation in the MIS.

This project gave large increases in annual income to many members. Participation was seen to be a significant factor, more so than any demographic characteristic. The relative frequency of participation in different opportunities for participation has a “substantial association” with increase in profit (Davis, 1990). Implementation activities were the most determining, but all types of participation had notable associations.

Unfortunately, integrated development has not been achieved in the MIS; while irrigation has been introduced, other areas of development are lacking. Many members suffered a decrease in annual income due to poor markets. Lack of access to necessary inputs, such as hybrid seed, may have also contributed to members not benefitting.

Power is an issue within the scheme. The degree of empowerment is less than ideal for the scheme as a whole. There are issues transferring and including it in participation opportunities, and there are many members who feel constrained in participating because of a lack of power.

Topics for further research related to participation in the MIS

Additional research is necessary to understand exactly which types of people are participating most. Other projects should be studied to see the makeup of their population and trends for participation. Analysis can be done to determine frequency of participation.
by member. This would allow the researcher to see the distribution of participation by individuals, examining if the bulk of participation occurrences is done by the same people or if it is more evenly spread out among members. The characteristics of those who participate most could then be identified. One should analyze if those with more esteem (wealth, education, position) participate more or less.

Further, participation frequency should be analyzed at the opportunity to see which particular opportunities correlate most strongly with benefits and with overall participation. Also, the participation opportunities should be categorized by their degree of empowerment to determine how strong a correlation there is between categorization of degree of empowerment and resultant benefits. Furthermore, a Likert scale could be adapted or developed to more specifically measure degree of empowerment. This could more accurately find correlations between degree of empowerment of participation opportunities and their relative correlation in benefiting development.

More research should be done to see what methods of communication would most effectively improve participation and development. Specifically, it could be analyzed to determine if those who communicated on the phone with the project leader were more likely to participate. Also, broader work should be done on communication for participation, such as identifying case studies that use alternative means of communication (posters, radio, extension agents, cell phones, announcements) as well as studying to see which means are most effective in facilitating participation.

Research should also be done on the markets in the MIS to see if they can sustain an increased yield. It must be known if the market will be able to sustain a continued
increase in yield or if an increased yield for all members of the scheme will decrease the
profits of the majority of annual farmers. Local farmers not in the scheme should be
surveyed to see if they have been negatively affected by the prices.

Also, further analysis should be conducted to determine whether a relationship
exists between interactions with district officials and degree of empowerment. This can
be done by analyzing if those who reported benefit in increased confidence c more total
interactions with the district office. Also, additional research should be done to see how
district official facilitated participation.

Lastly, the question of power must be better understood. Is there truly a power
differential at the local level? Who holds the power? What do respondents mean when
they agree with the fact that they are not powerful enough to participate? It should be
confirmed if this actually constrains their participation in opportunities within the MIS
and how their participation is constrained. It should also be determined if these who were
constrained by power were related to those with low education or low incomes or their
lack of leadership position in the IO. A survey might also be designed to see if these
differences were felt before the formation of the IO and what might be done to alleviate
them.
References:


Chambers, R., & Guijt, I. (1995). PRA five years later: where are we now?.


District Irrigation Development Team (DIDT), (2009). Request for additional funds from district irrigation development fund for construction of mblangwe irrigation scheme


International Fund for Agricultural Development (IFAD), (2009). Engaging with the indigenous poor


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Association: Hearing Before the Subcommittee on International Finance of..., 92-1 on HR 8750..., July 6, 1971 (Vol. 1).


Appendix A: Approval for Exemption from Review by Institutional Review Board

Office of Research
Office of Responsible Research Practices

Protocol Title: Assessing Farmer's Participation in Agricultural Development Projects in Morogoro Rural District, Tanzania
Protocol Number: 2013E0263
Principal Investigator: Robert Agunga
Date of Determination: 07/03/2013
Qualifying Category: 02
Attachments: None

Dear Investigators,
The Office of Responsible Research Practices has determined the above referenced project exempt from IRB review.
Please note the following:

- Retain a copy of this correspondence for your records.
- Only the OSU staff and students named on the application are approved as OSU investigators and/or key personnel for this study.
- No changes may be made to exempt research (e.g., personnel, recruitment procedures, advertisements, instruments, etc.). If changes are needed, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Per University requirements, all research-related records (e.g., application materials, letters of support, signed consent forms, etc.) must be retained and available for audit for a period of at least three years after the research has ended.
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University's OHRP Federally Assured #00006378. All forms and procedures can be found on the ORRP website: www.orrp.osu.edu.
Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.

Thanks,
Cheri

Cheri Pottey
Quality Improvement Specialist | Regulatory & Exempt Determinations
Office of Responsible Research Practices | The Ohio State University
Appendix B: Comprehensive List and Breakdown of Opportunities to Participate in the Mbalangwe Irrigation Scheme

<table>
<thead>
<tr>
<th>I. Type</th>
<th>a. Subtype</th>
<th>i. Sub-subtype</th>
<th>Participation opportunities in the MIS</th>
<th>Name of corresponding variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Decision Making</td>
<td>a. Initial</td>
<td>i. Needs and priorities</td>
<td>1. Creating obstacles and opportunities list</td>
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<td></td>
<td></td>
<td></td>
<td>2. Prioritizing obstacles and opportunities list</td>
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<td></td>
<td></td>
<td>ii. Whether to have project</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3. Ag feasibility study</td>
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<tr>
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<td></td>
<td></td>
<td>4. Environmental feasibility study</td>
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<td></td>
<td></td>
<td>5. Economic feasibility study</td>
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<td></td>
<td>6. Attending initial meetings</td>
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<td></td>
<td></td>
<td>7. Initial meetings</td>
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<td></td>
<td></td>
<td></td>
<td>8. Initial meetings</td>
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<td></td>
<td>9. Village mapping</td>
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<td>10. Participatory design</td>
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<td></td>
<td>b. Project-design</td>
<td>i. Meetings</td>
<td>12. Attending monthly meetings</td>
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<td>13. Voting in monthly meetings</td>
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<td>14. Voicing in monthly meetings</td>
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<td>15. Attending quarterly meetings</td>
<td>quarterly_meeting_attendance</td>
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<td>16. Voting in quarterly meetings</td>
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<td>17. Voicing in quarterly meetings</td>
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<tr>
<td></td>
<td>ii. Membership</td>
<td>18. Drafting constitution</td>
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</tbody>
</table>

continued
Table 17 continued

| Table 17: Breakdown of opportunities to participate in the MIS by participation type |
| --- | --- | --- |
| iii. Leadership selection | 19. Choosing IO leaders | officer_voting |
| 20. Choosing committee leaders | committee_leader_selection |
| 21. Choosing committee members | committee_memeber_selection |
| II. Implementation | a. Resource contribution | i. Material |
| 22. Bringing Sand | bringing_sand_frequency |
| 23. Bringing Stone | bringing_stone_frequency |
| 24. Brining Water | bringing_water_frequency |
| ii. Labor | 25. Guarding | hours_guarding |
| 26. Supervising | hours_supervising |
| 27. Building Bunds | days_bundbuilding |
| iii. Cash | 28. Water Use Fees | water_fees_frequency |
| 29. Annual Dues | member_fees_frequency |
| iv. Repair | 30. Repair materials | repair_materials_frequency |
| 31. Time repairing | repair_time_frequency |
| v. Cleaning | 32. Tertiary | tertiary_cleaning_frequency |
| 33. Main canal | main_cleaning_frequency |
| b. Administration and coordination | i. Administration and Coordination | 34. Leader of IO |
| 35. Leader of committee | io_leader |
| 36. Member of committee | committee_membeber |
| 37. Employed by contractor | employee |
| 38. Member of IO | membership_length |
| III. Evaluation | a. Direct | i. Open |
| 39. Scheme irrigate your land | acres_irrigated_frequency |
| 40. Feedback to district leaders | district_direct_feedback_frequency |
| 41. Feedback to IO leaders | village_feedback_frequency |
| ii. Structured | 42. Evaluation Survey | survey_frequency |
| b. Indirect | i. Political Activities | 43. Indirect district feedback |
| 44. Help to define success | defining_success |
| 45. Help set goals | goal_setting |
Appendix C: Study Instrument

Contact Information Card
Cade Weston
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The faculty supervisor for this research project is:
Dr. Robert Agunga
Agricultural Communication, Education, and Leadership
The Ohio State University
Columbus, OH 43210, USA
Phone: 1-614-292-8751
Email:agunga.1@osu.edu
You may contact him with questions or if you feel you have been harmed as a result of your participation. For questions about your rights as someone taking part in this study, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-614-688-4792 or 1-800-678-6251. You may call this number to discuss concerns or complaints about the study with someone who is not part of the research team.

Dear Farmer:

My name is Cade Weston and I am a graduate student at Ohio State University in the Department of Agricultural Communication, Education, and Leadership in the USA. However, in Tanzania I am staying at Sokoine University of Agriculture to collect data for my Master’s thesis. I am visiting you today because I am conducting a survey on why it is important to involve farmers like yourself when it comes to deciding how best government can help you. If the government were to ask you to participate in meetings to discuss how best to help farmers like yourself would you be interested? This is what I would like to discover by asking you a number of questions. Please feel free to answer those questions you want to answer and to leave out those you don’t want to answer. Also, feel free to stop at any time. To thank you for your time, you will receive 2,000 Tanzanian shillings, regardless of when you choose to stop. If you feel that a question is not clear, say so and I will try to ask it in another way. The questions will take about 1 hour of your time. There is a very small chance that if you give me your name someone might find your answers to these questions, but I will do everything I can to keep all information confidential. I will not put your name in any paper that I write. If you have any additional questions or comments feel free to contact me, my supervisor Dr. Robert Agunga, or the research office at the Ohio State University. Do you have any questions for me right now? Do you agree to participate? If so, let us begin.
A: About Your Family and Farm Your family and your farm are important to you and so talking about them will help us to know you better.

a. Village _______ b. Sub-village _______ c. Block___________ d. Day _______ e. Interview # _____

1. What year were you born? _______

2. What is your sex? Male Female

3. Marital status: Single Married Divorced Widowed

4. Do you have children? Yes No

5. If yes: a. How many are boys? b. How many are girls?

6. Do/will/have your children go to school? Yes No

7. If yes, how many? _____

8. Have you been to school? Yes No

9. If yes, what is the highest grade of education you have completed? Other:_________

10. Can you read and write Swahili? Yes No

11. Can you speak any other language(s)? (please list all)__________

12. What is your main occupation? ____________________________________________

List any additional activities you do to earn income? __________________________

13. How many acres do you own? _____ How many acres total do you farm? __________


15. Do you get help from veterinary services? Yes No

16. Mark all of the following that you use:

___ Local seeds _____ Manure fertilizer _____ Tractor

___ Government recommended seeds _____ Chemical fertilizer _____ Ox plow

___ Official recommended spacing _____ Chemical pesticides _____ Hoe/hand tools

17. Which of the following items do you own? (check all that apply)

___ Watch/clock _____ Motorcycle _____ Home access to internet

___ Radio _____ Cell phone _____ Newspaper subscription

___ TV _____ Bank account _____ Computer

___ Bicycle _____ Tractor _____ House roofed with aluminum

___ Access to electricity at home _____ Automobile _____ Access to clean drinking water

18. What other possessions do you have that you treasure? _______

19. Have you voted before in a national election? Yes No

20. How many times in the last year has your extension worker visited your farm? __________

21. Indicate which of the following is most true:

I do not have enough food to feed the family all year round

I have just enough food to feed my family all year round

I have enough food to feed my family all year round and extra to sell to market

22. What would you estimate is your total annual income? ______
Section B: Opportunities for participation in the Decision-making, Implementation, and Evaluation of Mbalangwe Irrigation Scheme

Decision-making:

1. How many times did you help to create a list of opportunities/obstacles in Mbalangwe?
2. How many times did you ever help prioritizing this list?
3. Did you ever answer questions by the district office related to economics in the beginning when they were trying to decide whether to have an irrigation scheme constructed?
4. Did you ever answer questions by the district office related to agriculture in the beginning when they were trying to decide whether to have an irrigation scheme constructed?
5. Did you ever answer questions by the district office related to environment in the beginning when they were trying to decide whether to have an irrigation scheme constructed?
6. In the beginning there were about 20 initial meetings to discuss having an irrigation scheme, how many did you attend?
7. At how many of the 20 initial meetings that you attended did you vote on something?
8. At how many did you speak up on your own?
9. How many times did you help make a map of the village area for the district office around year 2007?
10. How many different times did you help the district officials decide how to design the irrigation scheme or where to place it around year 2007?
11. Did you get to choose if the irrigation would come to your farm?
12. How many of the 12 monthly meetings have you attended in the last year?
13. At how many of these monthly meetings did you speak up on your own?
14. How many of the quarterly meetings have you attended?
15. At how many of these quarterly meetings did you speak up on your own?
16. Did you help in drafting the organization’s constitution?
17. Did you participate in selection of the irrigators’ organization president?
18. Of the 32 committee members on the four different committees for the Irrigators’ Organization how many did you participate in selection?
19. How many of the 7 committee leaders (i.e. chair and secretary or treasurer) did you participate in selection?

Implementation:

22. How many days did you spend bringing sand when first building the irrigation scheme?
23. How many days did you spend bringing stone when first building the irrigation scheme?
24. How many days did you spend bringing water when first building the irrigation scheme?
25. How many times did you help guard materials during the construction of the scheme?
26. How many times did you help supervise during the construction of the scheme?
27. About how many days have you spent building bunds?
28. How many times have you contributed water fees to the irrigators' organization?
29. How many times have you contributed member fees to the irrigators’ organization?
30. Since completing construction how many times have you brought sand for repairing the dam?
31. How many days have you helped to repair the dam?
32. How many times per year do you participate in the monthly cleaning of the tertiary canals?
33. Main canal and head-wick are cleaned 4 times a year, how many times do you help each year?
34. Are you/were you in the leadership of the irrigators' organization?
35. Are you/were in a leadership position of a committee?
36. Are you/were a member of a committee?
37. Were you employed to work by the contractor to construct the scheme?
38. Since what year have you been a member of the Irrigators’ Organization?
39. How many acres do you farm that are irrigated by the scheme?

Evaluation:

40. How many times in the last year did you communicate with district leaders to discuss how well the project is going?
41. How many times in the last year did you talk with village irrigation leaders to discuss how well the project is going?
42. Of the two surveys evaluating the success of the project how many have you done?
43. If you communicated information to any district leader (questions 19) this through another person in order to get your information to the district level?
44. Were you able to help defining success for the project
45. Were you able to help set any goals for the project?

Section C: Degree of empowerment of participation in Decision-making, Implementation, and Evaluation of the Mbalangwe Irrigation Scheme

Decision-Making:

1. If you participated in the list of obstacles/opportunities please circle the most true statement.
   a. No opportunity to express views or vote on priority opportunities/obstacles
   b. May express view but no right to advise on priority opportunities/obstacles
   c. Right to advise and expect consideration
   d. Right to advise or modify choices and priorities
   e. Right choose or prioritize but subject to higher authority's review
   f. Right to choose or prioritize without any review by higher authority
2. If you participated in one of these surveys by the district office when trying to decide whether to have an irrigation scheme, please circle the statement which is most true of it:
   a. No opportunity to express views or vote whether to build irrigation scheme
   b. May express view but no right to advise on whether to build irrigation scheme
   c. Right to advise and expect consideration whether to build irrigation scheme
   d. Right to advise or modify whether to build irrigation scheme
   e. Right choose whether to build irrigation scheme but subject to higher authority's review
   f. Right to choose whether to build irrigation scheme without any review by higher authority
3. If you attended any of the initial planning meetings, please circle that which is most true:
   a. No information on decisions that will be made, no opportunity to express my views, no vote
   b. Right to be informed prior to decision made; may express my view but no right to advise
   c. Right to be informed prior to decision made; right for me to advise and expect consideration
   d. Right to be informed and opportunity for me to modify or veto decision
   e. Right to be informed and make decisions by myself, subject to higher authority's review
   f. Right to be informed and make decisions myself without any review
4. If you participated in the participatory design or the village mapping, Please circle which of the following was most true:
   a. No control over how many acres to irrigate or whose land to irrigate
   b. No control over how many acres to irrigate but possibly some over whose land to irrigate
   c. Some control over how many acres to irrigate but no control over whose land to irrigate
   d. Some control over whose land to irrigate but no control over how many acres to irrigate
e. Some control over both how many acres to irrigate and whose land to irrigate
f. Substantial control over how many acres to irrigate and whose land to irrigate
g. Complete control over how many acres to irrigate and whose land to irrigate

5. If you attended any of the monthly meetings, please circle that which is most true:
a. No information on decisions that will be made, no opportunity to express my views, no vote
b. Right to be informed prior to decision made; may express my view but no right to advise
c. Right to be informed prior to decision made; right for me to advise and expect consideration
d. Right to be informed and opportunity for me to modify or veto decision
e. Right to be informed and make decisions by myself, subject to higher authority's review
f. Right to be informed and make decisions myself without any review

6. If you attended any of the quarterly meetings, please circle that which is most true:
a. No information on decisions that will be made, no opportunity to express my views, no vote
b. Right to be informed prior to decision made; may express my view but no right to advise
c. Right to be informed prior to decision made; right for me to advise and expect consideration
d. Right to be informed and opportunity for me to modify or veto decision
e. Right to be informed and make decisions by myself, subject to higher authority's review
f. Right to be informed and make decisions myself without any review

7. For forming the Irrigators' organization and leadership please circle that which is most true:
g. No information on decisions on how to structure organization and leadership. no vote
h. Right to be informed prior to structuring organization and leadership may express my view, but no right to advise
i. Right to be informed prior to structuring organization and leadership; right for me to advise and expect consideration
j. Right to be informed and opportunity for me to modify decisions on how to structure organization and leadership
k. Right to be informed and make decisions by myself, subject to higher authority's review
l. Right to be informed and make decisions myself on how to structure organization and leadership without any review

Implementation:
8. Was it mandatory to contribute the water, sand, and stone for construction?
9. Was this time working in supervision, guarding, or building mandatory?
10. Is it mandatory for you to pay these fees?
11. Was it mandatory for you to help with the labor and resources for repairs to the dam?
12. Is it mandatory for you to help with the cleaning of the dam?
13. If you were in any leadership positions or employed as laborer for contractor, please circle that which is most true for you in that position:
a. No information on decisions that will be made, no opportunity to express my views, no vote
b. Right to be informed prior to decision made; may express my view but no right to advise
c. Right to be informed prior to decision made; right for me to advise and expect consideration
d. Right to be informed and opportunity for me to modify or veto decision
e. Right to be informed and make decisions by myself, subject to higher authority's review
f. Right to be informed and make decisions myself without any review

14. Did you get to choose if the irrigation would come to your farm?

Evaluation:
15. If you communicated to any of the district officials about how the project was going circle the statement that best describes your involvement in these discussions:
a. No right or opportunity to make thoughts of project performance
b. Possibly had opportunity to express thoughts on project performance
c. Clearly had opportunity to express thoughts on project performance
d. Opportunity and right to make some evaluation and to communicate it to the authorities
e. Opportunity and right to make serious evaluation and to expect it will be taken seriously by the authorities
f. Opportunity and right to make thorough evaluation, even to get project modified or terminated

16. If you communicated to any of the village irrigation leaders about how the project was going, circle the statement that best describes your involvement in these discussions:
   a. No right or opportunity to make thoughts of project performance
   b. Possibly had opportunity to express thoughts on project performance
   c. Clearly had opportunity to express thoughts on project performance
   d. Opportunity and right to make some evaluation and to communicate it to the authorities
   e. Opportunity and right to make serious evaluation and to expect it will be taken seriously by the authorities
   f. Opportunity and right to make thorough evaluation, even to get project modified or terminated

17. If you completed any of the evaluation surveys, circle the statement that best describes your involvement in these surveys:
   a. No right or opportunity to make thoughts of project performance
   b. Possibly had opportunity to express thoughts on project performance
   c. Clearly had opportunity to express thoughts on project performance
   d. Opportunity and right to make some evaluation and to communicate it to the authorities
   e. Opportunity and right to make serious evaluation and to expect it will be taken seriously by authorities
   f. Opportunity and right to make thorough evaluation, even to get project modified or terminated

Section D: Channels for facilitating participation in the Decision-making, Implementation, and Evaluation of Mbalangwe Irrigation Scheme

Decision-Making:
1. If you participated in the list of opportunities/obstacles, who told you about this opportunity?
2. If you participated in any of the feasibility studies, who told you about this opportunity?
3. If you helped make the map of the village with whom was this done?
4. If you helped design the scheme, with whom was this done?
5. How did you find out about bringing the materials for constructing the project?
6. How did you find out about the time to spend guarding, supervising, and building bunds?
7. How did you find out about paying the member fees?
8. How did you find out about the times the scheme needed rehabilitation?
9. How did you find out about these times to clean the dam?
10. Who first told you about the Irrigation Scheme?
11. Who first told you about the Irrigators’ Organization?
12. If you communicated with any of the village irrigation leaders about how the project was going, who did you communicate with?
13. If you participated in one of the evaluation surveys, who distributed it to you?

Section E: Benefits
1. How many acres of land do you own that has irrigation built on it?
2. How much has this increased the value of the land per acre?
3. How many acres do you farm that are irrigated by the scheme?
4. How many bags per acre did you produce before the scheme?
5. How many bags per acre do you produce now?
6. Has the price per bag increased or decrease
7. If so how much? (indicate increase or decrease)
8. Why?
9. Do you feel any of the trainings connected to this project helped you?
10. If yes, how many of them?
11. Do you feel that men and women get along better now than they did before the project?
12. Do you benefit from the bridge put in during this project?
13. Do you benefit from any improved roads from this project?
14. Has this project made you feel more confident in your interactions with other people?
15. Has this project increased the power you have within the community?
16. Did this project show you that you have an important role to play in development?
17. Did this project show you that participation in development projects is an effective approach to improved well-being?
18. Were there any harmful consequences from this project? Please list:
19. Why did you choose to join the Irrigators' organization?

Section F: Constraints

<table>
<thead>
<tr>
<th>Constraints:</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I don’t have time to participate in development projects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I am not aware of opportunities to participate.</td>
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<tr>
<td>3. I don’t have the expertise to participate.</td>
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<tr>
<td>4. Participation in development projects is for men only.</td>
<td></td>
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<tr>
<td>5. I don’t have money to participate in development projects.</td>
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<tr>
<td>6. I am not powerful enough to participate.</td>
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<tr>
<td>7. There is always trouble at participatory meetings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Participatory meetings are held too far away from my home.</td>
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<tr>
<td>9. My level of education is too low to participate in development projects.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Please list anything else that has limited or prevented your participation in any of these decisions, implementation, benefits, or evaluation of Mbalangwe Irrigation Scheme: