

Mobile Phones, Social Relations, and the Gatekeepers to Women's Empowerment in Maasai
Households

Kelly Hope Summers

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Timothy D. Baird, Committee Chair
Emily Woodhouse
Maria Elisa Christie

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Abstract

Throughout the developing world, the mobile phone has been heralded as a tool that can empower and lift women out of vulnerable situations. While many scholars and development professionals believe that phones empower women, some contend that phones amplify disparities for people who are not well-positioned in society. To better understand how the diffusion of phones has impacted women, this thesis examines the relationship between mobile phones and socially constructed gender-based inequalities in agro-pastoralist Maasai communities in northern Tanzania. Grounded in perspectives from scholarship on women's empowerment and rural livelihoods, I ask: (1) how do women access and use phones?; and (2) how are women's phone uses embedded in existing social relations? This research relies on semi-structured interviews and household surveys conducted in the summer of 2018 to identify Maasai women's perspectives on phones, social relations, and power. Through inductive and deductive qualitative content analysis, findings indicate that phone access is fluid. There are a multitude of relationships between phones and empowerment, and these relationships are not only a function of a woman's personal choice and characteristics, but often more importantly her position in the household, the household norms her husband controls, and her husband's attributes. These results help show how women's empowerment in patriarchal societies, which may be afforded by new technologies, is guarded by men and subject to their discretions. This study highlights the importance of engaging men and women in discussions of and interventions surrounding women's empowerment.

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General Audience Abstract

Mobile phones are used throughout the world, even in rural, developing areas. Both men and women are adopting cell phones that can provide access to greater amounts and different types of information that was previously inaccessible. Some development professionals and scholars argue that mobile phones are a tool that can empower marginalized communities, like women. Others contend that mobile phones fail to transform the lives of women due to existing gender inequalities. My research seeks to answer the question: do mobile phones empower women by increasing access to resources and enhancing decision-making power? This research is situated in northern Tanzania in predominately ethnically Maasai communities where patriarchal (system controlled by men) and polygynous (marriage of one man with several women) practices essentially give men the power to determine the responsibilities, roles, and rights of all community members. These practices are embedded in important traditions that help Maasai communities cope with stress and maintain or enhance life now and for future generations. The widespread adoption of mobile phones creates an opportunity for novelty in these traditional norms. To understand how Maasai women may use mobile phones to challenge traditional practices that permit gender inequalities, this study conducted interviews and surveys with women in ten rural communities to examine: if and how women access and use mobile phones; the opportunities and challenges that mobile phones present; how women leverage phones to access resources and practice agency (having options and the ability to define and act on goals); and how social position in the household interacts with processes of empowerment that phones may permit. Findings show that there is no single relationship between mobile phones and empowerment, but rather a multitude of relationships that are influenced by social position both in and out of the household. This study illustrates the importance of considering local socio-cultural norms and engaging men in development interventions for women's empowerment.

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List of Abbreviations

CBA – Cognitive-based assets
ICT – Information and communication technology
ICT4D – Information and communication technology for development
NBA – Network-based assets
NSF – National Science Foundation
RBA – Resource-based assets
SDG – Sustainable Development Goal
SIM - Subscriber identification module
SMS – Short message service
SLA – Sustainable livelihoods approach
SRA – Social relations approach

Glossary of Swahili and Maa

Endasati – Female aged 33-49 years with grandchildren
Endida – Favorite wife
Endingi – Least favorite wife
Enkang – Fenced homesteads which may contain multiple household and sub-households
Enkaji – Sub-households in *enkang*
Kibati – Informal savings group
Kikundi cha mifugo – Livestock group
Koko – Female beyond reproductive age
Korianga – Male aged 21-35 years
Maape tenebo – Cooperation or working together
Olmarei – Familial units, equivalent to household in this thesis
Siangiki – Female aged 20-32 years, married with children
Vicoba – Formal savings group

1. Introduction

1.1 Problem statement

In the fifth Sustainable Development Goal (SDG), the United Nations emphasizes the importance of expanding freedoms equally for all people by eliminating discrimination against women; promoting gender equality; and increasing women's access to education, paid work, ICTs (information and communication technologies), and political representation (United Nations, 2015). While women's empowerment is intrinsically worthwhile in and of itself (World Bank, 2012), data from many international development studies show that empowering women can increase economic growth (OECD, 2012), improve health and education of children (World Bank, 2012), decrease child mortality (Gakidou et al., 2010), improve organizational effectiveness of businesses (McKinsey & Company, 2017), and increase agricultural productivity (FAO, 2014). Development intervention agents, including multi- and bi-lateral agencies, local and national governments, and civil society organizations, have examined best practices to reduce existing gender disparities, especially amongst rural communities in developing countries. Many development agents believe that harnessing new technologies, like mobile phones, can advance gender equality by empowering women (Santosham & Lindsey, 2015).

Advocates for information technology as a path towards greater gender equality suggest that phones can act as a catalyst to promote empowerment, reduce vulnerability, and provide opportunities by increasing access to information resources (Rowntree, 2018). Many ICT for development (ICT4D) studies demonstrate how mobile technologies reduce barriers to information and communication, improve access to healthcare (Hampshire et al., 2015), promote market participation (Muto & Yamano, 2009), enhance market efficiency (Abraham, 2007), improve agricultural extension services (Martin & Abbott, 2011), and improve rural livelihoods (Sife et al., 2010). Various women's empowerment and ICT4D studies have found that phones help women gain employment (Hilbert, 2011), develop independence (Onyejekwe, 2011), increase economic power (Cummings & O'Neil, 2015), and participate in decision making in domestic domains (Hoan et al., 2016). While many studies identify the various ways phones promote empowerment and provide opportunities, few have examined who actually benefits or how social relations may be transformed from phone use (Chan, 2015; Jeni et al., 2014).

Some scholars contend that mobile phones are not always gender neutral (Castells et al., 2009; Wyche & Olson, 2018), and question the transformative power of phones amongst marginalized groups like women (Cummings & O'Neil, 2015), especially when social relations and local context are not considered (Gigler, 2004; McNamara, 2003). Many have examined a digital gender divide where lack of education, employment, or income negatively affect mobile phone access (Broadband, 2017; Cullen, 2001; Hilbert, 2011). Studies have found that phones do not transform social relations and actually support existing social structures (Baird & Hartter, 2017). Others have found that benefits of phone use, such as improved communication and information sharing, are strongly influenced by existing social patterns (Asaka & Smucker, 2016; Butt, 2015). Other scholars believe that existing methods to examining ICTs are limiting (Duncombe, 2006), with many studies focusing on mobile phone access instead of what happens after access or focusing studies on urban areas despite an urban-rural digital divide in many developing contexts (Castells et al., 2009).

Contested findings from the existing scholarship highlight the need to investigate and examine local social contexts more deeply. Many opportunities remain to examine how women embrace mobile phones and what the implications of this may be for gendered social relations, especially among indigenous populations in rural contexts. While studies have examined how agro-pastoralist communities use mobile phones to support shifting economic activities (Baird & Hartter, 2017), mitigate human-wildlife conflict (Lewis et al., 2016), access information about markets and grazing (Debsu et al., 2016), enhance social connectedness (Djohy et al., 2017), carry out financial transactions (Msuya & Annake, 2013), and exchange information related to livestock herding (Butt, 2015), I am aware of no studies that have examined the gendered implications of phone use in these contexts. Furthermore, common frameworks for evaluating rural livelihoods, which privilege male accounts of household activities and concerns, often fail to account for attitudes, knowledge, and experiences of other household members, especially women (Radel et al., 2013; Sakdapolrak, 2014).

The purpose of this thesis is to understand how phones may empower or disempower women in agro-pastoralist and patriarchal Maasai communities. Specifically, this work identifies how Maasai women access and use phones, processes of empowerment that phones may enable, and how these processes are embedded in existing social relations. By examining phone access

and considering women's lived experiences and local social norms, this study addresses literature gaps in the following novel ways:

- (1) Adds to the agro-pastoralist literature by identifying women's experiences with and perceptions of phones in agro-pastoralist contexts.
- (2) Adds to the rural livelihoods literature by engaging women in the household to report attitudes, experiences, and knowledge instead of relying on a typically male household head.
- (3) Adds to the women's empowerment literature by examining how new technology relates to gendered social relations in patriarchal and polygynous contexts.
- (4) Adds to the ICT literature by applying qualitative methods in a population that has yet to be examined and considers how social norms influence phone access in local contexts.

To frame this work, this thesis first details the position of this work within the women's empowerment, rural livelihoods, and agro-pastoralist literature (Section 2). The following section describes the conceptual framework, research objectives and implications, and the study site (Section 3). Section 4 outlines the methodological approach to collect and analyze data. Section 5 details the qualitative and quantitative findings, while Section 6 provides an interpretation of these findings. Broader impacts of this research include the dissemination of findings to communities in the study area and to NGOs that work on development in patriarchal, agro-pastoralist areas.

2. Background

2.1 Theoretical overview

This research draws from perspectives in women's empowerment and rural livelihoods to provide a better-contextualized understanding of the intersection between technology and gender in Maasai communities. I use the Social Relations Approach (SRA) to explore gender relations and the subjective meanings of empowerment in this context, and draw upon the Sustainable Livelihoods Approach (SLA) to understand how intrahousehold gender relations structure resource access and decision-making power. In this theoretical overview, I frame how I apply these approaches to this study through a discussion of the scholarship surrounding women's empowerment, ICTs, and sustainable livelihoods.

2.1.1 *Women's empowerment*

The concept of women's empowerment throughout the global south gained traction in the 1980s when feminists voiced concerns over the existing approaches to development, which largely ignored gender-related issues. Initially, the term described efforts to transform unequal power relations and advance gender equality (Batliwala, 1993; Cornwall, 2016). Ensuing discourse led to the conceptualization of women's empowerment as a process where economic, political, and social power moves between and across individuals and groups (Batliwala, 2007). Even though it has become one of the most widely used concepts in the development arena, there still remains considerable ambiguity over what empowerment is, how to achieve it, and how best to measure it (Cornwall, 2016; Goldman & Little, 2015). Empowerment is a process by which "people...gain mastery over their lives. However, the content of the process is of infinite variety" (Rappaport, 1984, p. 3). As women are often in a position of subordination in many developing contexts, women's empowerment is "the process by which women gain control...and challenge the ideology of patriarchy and gender-based discrimination against women in all institutions and structures of society" (Batliwala, 1994, p. 130). Empowerment is not just about the exercise of power, but also encompasses personal, relational, and collective processes that lead people to see themselves in a position of power and others to see them in a position of power (Goldman & Little, 2015; Sen, 1997).

By its nature, empowerment is related to power, or "the ability to make choices" (Kabeer, 2005, p. 13). Gita Sen (1993) views empowerment as changing relations of power "which constrain women's options and autonomy and adversely affect health and well-being." Rowlands (1997) identifies four different types of power: (1) power over, or the ability to influence; (2) power to, or developing skills and capabilities; (3) power with, or collective strength and agency; and (4) power from within, or confidence, self-esteem, and dignity. While empowerment entails the expansion of power, it does not require the redistribution of power so that men lose power in processes of women's empowerment. Efforts to create a more equitable society through enhanced inclusion and accountability may benefit men and women equally and promote social cohesion (Bennet, 2002), especially if development initiatives incorporate men and masculinities (Cleaver, 2002). Since processes of empowerment are complex, multi-layered, and multi-dimensional, it is appropriate that literature on women's empowerment adopts various conceptual and empirical approaches to examine the mechanisms by which people gain power.

Approaches to examining women's empowerment

Many scholars assert that empowerment is a dynamic socio-economic process that exists between the individual and broader community (Batliwala, 2007; Gigler, 2004) and that changes in power need firm roots in both private and public systems (Kitunga & Mbilinyi, 2009). Literature stresses the “inner-transformation” as perceived through self-efficacy, agency, and control that must accompany external endowments of power (Malhotra et al., 2002). Kabeer conceptualizes empowerment as a multidimensional process of change where power is renegotiated in existing social relations (Kabeer, 2011). Kabeer (1999) framed empowerment through three interrelated dimensions: (1) agency, the ability to practice choice and act on it; (2) resources, assets that enhance the ability to practice agency; and (3) achievements, the outcomes of practicing agency. Here, empowerment is a process where strategic choices are made from options, with resources, and through agency to achieve a desired outcome by those who were previously denied this capability (Goldman & Little, 2015; Kabeer, 2001). This complex and multidimensional process follows multiple pathways across multiple scales.

Given the complexities and multidimensionality of empowerment, scholars encounter challenges identifying, observing, and measuring empowerment. Common empowerment frameworks address dimensions related to economic resources, socio-cultural norms, social relations, legal rights, political involvement, and psychological well-being that occur at the individual, household, community, and broader community scales (Malhotra et al., 2002). However, since empowerment is not a stand-alone condition, measuring empowerment processes presents empirical challenges. In development practice, many strategies focus on isolated aspects of empowerment to design, implement, and measure outcomes of development interventions that focus on empowerment (Malhotra et al., 2002). Similarly, much of the academic literature focuses on one dimension or scale of empowerment (Malhotra et al., 2002). Some scholars contend that since empowerment cannot be measured directly, studies must rely on proxies (Ackerly, 1995), including educational attainment (Takayanagi, 2016), participation in political meetings (Grabe, 2015), autonomy (Basu & Basu, 1991), measures of gender-based domestic violence (Wekwete et al., 2014), involvement in market activities (Ackerly, 1995), control over resources (Quisumbing & de la Briere, 2000; Rao, 2017; Solanke et al., 2018), ability to respond to natural disasters (Juran & Trivedi, 2015), well-being and capabilities (Fielding & Lepine, 2017; Zereyesus, 2017), leadership roles in community (Chattopadhyay & Duflo, 2001), input in

productive and reproductive household decision-making (de Brauw et al., 2014; Sumner et al., 2016), and health indicators (Badejo et al., 2017; Hindin, 2000).

Empowerment at the household level

The bulk of empowerment scholarship has been focused on the household level (Carr, 2005; Malhotra et al., 2002), which is the level that this research focuses on. The relations between members within a household strongly shape resource access and control (Radel et al., 2013; Rocheleau et al., 1996; Serneels et al., 2009). While household-level studies and development interventions are common, there remains considerable ambiguity in conceptualizing the term household (Guyer & Peters, 1987; Niehof, 2011). Traditional development economics defined the household as a single unit where individuals behave in harmony (Udry, 1996). This definition, however, fails to capture the dynamic power relations and negotiations that take place within the household. More recent research defines the household as, “a group of people living under the same roof, eating out of the same pot, and making joint decisions” (Doss, 2001, p. 2086). However, this definition does not fit in many contexts, and does not translate directly into studies that examine pastoral livelihoods where norms of polygyny and mobility contradict this definition (Yurco, 2018). As Carr (2014) argues, there is a need to reframe the concept of household to fit local context. Complexities in agro-pastoralist norms of mobility and social relationships presents challenges to defining the household and conceptualizing power relations.

A common approach to examining household power relations is to first identify who contributes to decision-making (Seymour & Peterman, 2018). Decision-making is both a task and a process in which various negotiations take place. The household is a place of cooperation and conflict (Sen, 1987) where household members exhibit different roles, responsibilities, access to resources, and participation in household decisions. For many studies, intra-household decision-making is divided into productive and reproductive decisions that contribute to livelihood activities and assets (FAO, 2012). Productive, or economic, decisions encompass both activities and decisions that contribute directly to income generation, such as herding, labor migration, and agricultural labor (Beuchelt & Badstue, 2013). Alternatively, reproductive decisions encompass any work that adds to or cares for human resources, such as family planning, school attendance, healthcare, and domestic duties (Beuchelt & Badstue, 2013). Within many development contexts, it is assumed that men and women have unequal access to

productive capital (Kameri-Mbote, 2006). However, external assumptions about gender roles and power may be wrong or too simplistic (Hodgson, 2001), and may end up reshaping power relations in unintended ways in development interventions.

Social relations approach

Capturing the complex process of empowerment in empirical research is difficult. Early studies on empowerment emphasized changes in power to advance gender equality (Batliwala, 1993). Cornwall (2016) argues that recent discussions surrounding empowerment by development agents and scholars have lost insights from these early writings. Kabeer introduced the SRA in 1994 to present the idea that women's position and condition in developing areas is mediated by social relations (Kabeer, 1994). Different institutions at the family, market, community, and state levels produce and reinforce social relations (Kabeer, 1994). Gender is one type of social relation that influences the distribution of resources, responsibilities, and power among men and women (Moser, 1989; Quisumbing et al., 2014). Gender inequality means that men and women experience disparities in access to options, choice, and control, which are integral elements of agency and thus empowerment (Gigler, 2004; Malhotra et al., 2002). Since social relations shape the distribution of resources, responsibilities, and power (Miles, 2016), institutional norms and a person's position within these institutions regulates access to resources and the practice of agency (Goldman & Little, 2015). Women's empowerment goes beyond reallocating responsibilities and resources, but actually involves a "redistribution of power" in social relations (Kabeer, 1994; Miles, 2016). Addressing gender inequalities does not lie within assets themselves, but within how social relations dictate access to assets, opportunities, and decision-making power. While SRA is a framework designed for development planning and intervention, it is also a conceptual method to analyzing existing gender disparities in the distribution of power. Importantly, the SRA does not define local processes of empowerment, but rather provides a strategy to analyze relationships between people, negotiations of power, and how institutions produce and reinforce social relations.

The role of mobile phones in women's empowerment

As ICTs have spread, scholars and development practitioners alike have focused on their potential roles in women's empowerment for sustainable development. ICTs are tools that create,

send, receive, store, and manage information (Nath, 2001). Many studies have illustrated the positive economic impact ICTs have on women's lives in developing contexts (Nikulin, 2017). Consistent with traditional neoliberal approaches to development, these studies highlight the tangible benefits of ICTs which may contribute to women's empowerment, including: increased income earning ability (Davis, 2007; Huyer & Carr, 2002); enhanced marketable skills (Brodman & Berazneva, 2007); increased access to information to make informed decisions and reduce costs (Antonio & Tuffley, 2014); enhanced access to networking opportunities (Gurumurthy et al., 2012); increased control over income (Gurumurthy & Chami, 2014), and greater economic independence (Cummings & O'Neil, 2015).

The mobile phone especially has become a focus of ICT4D studies. Without the considerable investment that is required for other ICTs, mobile phones are an accessible, low-cost alternative to reduce information and communication barriers (Muto & Yamano, 2009). As such, mobile phones are among the most ubiquitous ICTs in the developing world (Santosham & Lindsey, 2015). Researchers have identified the positive economic impacts mobile phones have had on economic development, including reduced transaction costs, enhanced market flows, amplified flow of existing materials and information in microenterprises (Donner & Escobari, 2010), and poverty reduction (Bhavnani et al., 2008).

In recent years, scholars have identified many intangible effects of mobile phones on women's lives (Horst & Miller, 2006; Sridhar & Sridhar, 2006). Non-economic benefits of phones include: strengthened family ties (Smith et al., 2011); improved psychological well-being (Smith et al., 2011); a heightened sense of mattering (Chew et al., 2015); improved role as a mother (Chib et al., 2014); increased autonomy (Tacchi & Kathi Kitner, 2012); and ease of seeking social support (Chib et al., 2013). Some studies have even found that adoption of ICTs challenges and redefines traditional gender norms (Chib & Hsueh-Hua Chen, 2011; Garrido & Roman, 2006; Kelkar & Roman, 2002; Tenhunen, 2008). While scholars have presented phones as a "great equalizer" (Drucker, 2001), others have identified how phones can facilitate both women's empowerment and disempowerment (Hijazi-Omari & Ribak, 2008; Rich & Horst, 2011)

To examine the effect of ICTs on women's empowerment, many scholars have adopted Amartya Sen's capability approach (CA) (1999). CA is a normative framework to examine human development and well-being (Robeyns, 2005) that contrasts purely economic approaches

to development. Sen applies a bottom up approach where individual freedoms and capabilities are the building blocks of development (1999). Instead of focusing solely on economic or instrumental gain, this approach emphasizes human agency, or the freedom and ability to pursue one's own interests to achieve a desired outcome and a life that one values (Hoan et al., 2016). In the context of phones, CA highlights individuals' capabilities and autonomy to use phones to achieve a desired outcome. While the focus of CA is at the individual level, there is also a relational aspect in that capabilities are a function of one's own abilities as well as relative position in society (Smith & Seward, 2009). This framework highlights the need to move beyond mere access to ICTs and instead focus on people and how they are able to use ICTs (Alampay, 2006).

Intersectionality and technology

Most studies of ICTs in developing contexts fail to account for differences in women's daily lived experiences with phones, with some exceptions (Choudhury, 2009; Faith, 2018; Hoan et al., 2016; Wyche & Olson, 2018). Specifically, the intersections of women's diverse identities with ICTs should be examined more carefully. Many discussions surrounding women's empowerment and technology rely on a binary view of gender, that is, women as a monolithic group encounter more barriers to phone access than men (Bailur et al., 2018). Since not all women experience the same social, economic, political, or technological constraints, intersectionality has become a prominent aspect of gender studies (McCall, 2005). Intersectionality describes the multiple, interacting identities of an individual or group based not only on gender, but also on ethnicity, age, race, or other attributes (Crenshaw, 1989; Crenshaw, 1991). O'Donnell and Sweetman (2018, p. 217) argue that "technology mirrors the societies that create it, and access to (and effective use of) technologies is affected by intersecting spectrums of exclusion including gender, ethnicity, age, social class, geography, and disability." While some studies have considered differences in women's experiences with mobile technology based on income (Faith, 2018), age (Zelezny-Green, 2018), and residential status (Hoan et al., 2016), more can be done to apply an intersectionality lens.

2.1.2 Rural livelihoods

The Sustainable Livelihoods Approach (SLA) is a common framework in the fields of Geography, Anthropology, Development Studies, and Gender Studies to examine the well-being of poor people in rural, developing contexts (FAO, 2012). Broadly, livelihoods are comprised of the “capabilities, assets (stores, resources, claims, and access), and activities required for a means of living” at the local scales (Ellis, 2000, p. 7). To this, SLA integrates three dimensions that are believed to comprise a sustainable livelihoods: capability (Jodha, 1988; Sen, 1981), social sustainability (Lélé, 1991), and equity (Chambers & Conway, 1992). A livelihood is considered sustainable when it can cope with disturbance, maintain and enhance assets and capabilities, and provide livelihoods opportunities for future generations (Chambers & Conway, 1992).

Important concepts surrounding the SLA include the vulnerability context, assets, institutions, strategies, and outcomes (FAO, n.d.). The vulnerability context describes unpredictable events that can undermine household livelihood strategies. Unpredictable events include shocks (conflict, drought, wildlife attacks, etc.) and trends (demographic, governance, etc.). Livelihood assets are the tangible and intangible capitals that people use to live their lives. Institutions, and the policies they implement, are the frameworks of rules that take the forms of organizations (Kabeer, 1994; North, 1990). Strategies are the activities and choices people make to reach a desired outcome. And outcomes are the positive and negative consequences of livelihood strategies for well-being, health, resilience, food security, status, etc. Influence over and access to livelihood assets can influence changes in institutional structures (levels of government and market) and processes (laws, culture, policies) which can enhance livelihood strategies to improve livelihood outcomes (reduce poverty, gain employment, increase well-being, reduce vulnerability, sustain natural resource base) (Scoones, 1998). Relatedly, the SLA presumes that poor people are interested in minimizing risk and reducing vulnerability by diversifying their livelihoods activities and assets (FAO, 2012).

Ultimately, the SLA is primarily concerned with people and their assets, also called strengths or capitals (GLOPP, 2008). This framework is grounded in the assumption that people need a variety of assets to achieve desired livelihood outcomes. SLA identifies five different types of capital: human, social, natural, physical, and financial (DFID, 2001). Human capital encompasses the skills, knowledge, capabilities, and health required to enhance livelihood outcomes. Social capital is comprised of the relational resources that individuals use to achieve a

desired outcome. Natural capital includes the natural resources that people use in their livelihood pursuits, such as water, air, land, etc. Physical capital is the material infrastructure that people rely on, including tools and equipment. And financial capital includes economic resources such as savings, financial services, and money. SLA maintains that the more assets a household has access to, the less vulnerable the household is to the negative implications of shocks and trends.

A critical weakness of the SLA is that it does not capture intrahousehold inequalities in the distribution of resources, which are often gendered (Krantz, 2001). The abundance and relative importance of each type of asset varies among individual household members (Radel et al., 2013). These are determined through institutional norms, or the structures and processes that dictate social position. Institutions, including marriage and family, endow certain individuals with higher social position, a broader asset base, and more opportunities. Conversely, individuals in a subordinate position have a narrower asset base and fewer livelihood activity options. It follows that individuals in inferior social positions are more vulnerable to the effects of undesirable livelihood outcomes, which can lead to a vicious cycle of deepening vulnerability and widening inequalities. While there may be a mutual relationship between resource access and social position, some resource types may be more influential than others.

Social capital in particular can influence, and can be influenced, by the flow and accumulation of other assets (Emery & Flora, 2006). Foley and Edwards (1999) conceptualize social capital as "how people find the things they need, through the people they know, to achieve their individual or group goals" (Naughton, 2014, p. 8). Social capital is creating and maintaining relationships and social connectedness. It is widely accepted that social capital is produced through social networks (Pretty, 2003). Scholars of social networks often distinguish between two different types of social capital: "bonding" and "bridging" (Patulny & Lind Haase Svendsen, 2007). Bonding social capital is characterized by strong ties between people that exhibit high levels of similarity, usually seen within homogenous social groups developed through kinship, friendship, or community. This type of social capital is more inward-looking and reinforces a shared sense of identity, belonging, and reciprocity. Bridging social capital, in contrast, is characterized by weak ties between people with a shared interest but different social identities. While bonding social capital is typically viewed as "getting by," bridging social capital is described as "getting ahead" as these relationships improve access to assets. In this sense, individuals rely on different types of social capital to acquire other types of assets.

2.2 Agro-pastoralist literature

As men and women in Maasai communities are adopting mobile phones, their livelihoods are also diversifying, creating many new spaces within traditional institutions for novelty. Within these contexts, this study contributes to multiple themes within the literature on Maasai agro-pastoralists, specifically surrounding gender relations and emerging patterns of phone use. Here, I discuss these themes in light of ongoing livelihood diversification and women's empowerment in Maasai society.

2.2.1 Livelihood diversification

Traditionally, the Maasai is a semi-nomadic, patriarchal society that practices pastoralism and polygyny in the semi-arid grasslands of northern Tanzania and southern Kenya. Traditional institutions, especially gender roles and the age-set system, persist today and maintain a comparatively strict division of labor in society (Hodgson, 2001) that institutionalizes gender inequalities (Goldman & Little, 2015). Gender and age determine social position: women are subordinate to men and younger ages are subordinate to older ages. For men especially, age-sets are integral in everyday life as men move from young uncircumcised boys, to young warriors, elders, and eventually to venerable elders (Hodgson, 2005). Typically situated in a higher social position, elder men exhibit power to enforce these gender and age-set norms and essentially define the role and value of community members (Dutt & Grabe, 2017). Despite their important role in the household, women are viewed as subordinate members of society, considered children who are expected to obey the commands of their fathers and husbands (Hodgson, 2001). While the approximate age of women does influence extent of freedom and respect, status is also contingent on which wife number a woman is, number of children she has, and respectability of her sons (Hodgson, 2005). Development interventions have increasingly challenged traditional livelihoods and gender social relations of the Maasai in processes of livelihood diversification.

Maasai have diversified their livelihoods as a risk mitigation strategy to respond to uncertainty and disturbance (Baird & Leslie, 2013). According to Ellis (1998, p. 1), livelihood diversification is the “process by which rural families construct a diverse portfolio to survive and to improve their standards of living.” Drivers of livelihood diversification in Maasai communities include conservation initiatives (Baird & Leslie, 2013), land privatization (Homewood, 2004), access to markets (Barrett et al., 2001), NGO development interventions

(Igoe, 2003), other forms of scripted and unscripted development programs (Baird, 2014), Christianity (Baird, 2014; Hodgson, 2005), and climatic disturbances such as drought (Block & Webb, 2001; Singh et al., 2013). Many of the development interventions that contribute to livelihood diversification are tied up with broader structural forces that have introduced liberal ideas about human rights that challenge traditional institutions across Maasailand.

Mixed outcomes occur as a result of livelihood diversification and the adoption of new ideas that challenge traditional norms. While livestock production is still the primary livelihood activity, many communities have adopted new forms of land tenure (Wangui, 2008), embraced cultivation and agro-pastoralism (McCabe et al., 2010), increased student enrollment in schools (Wangui, 2008), adopted new conceptions of well-being (Woodhouse & McCabe, 2018), and built school, water, and health clinic infrastructures (Baird, 2014). While many studies argue that livelihood diversification combats rural poverty, some studies exhibit increased marginalization of women (Smith, 2015), greater wealth inequalities (Barrett et al., 2001; McCabe et al., 2010), and increased tensions between Maasai communities and external development and conservation agents (Baird & Leslie, 2013; Homewood, 2004). Livelihood activities have transformed in response to development interventions, but not all community members have seen improved social relations from this transformation.

2.2.2 *Women's empowerment*

Despite the changes that livelihood diversification has facilitated, traditional social relations surrounding the age-set system and gender still largely determine individuals' roles and responsibilities in Maasai communities. Early development initiatives neglected the engagement of women, which led to the loss of rights and freedoms women previously held in society, such as shared a responsibility in household decision-making, autonomy in mobility, and rights over livestock and livestock products (Hodgson, 2001; Hodgson, 2005). More recent development interventions strive to enhance women's participation in local political, economic, and social systems (Goldman & Little, 2015). Recent studies show that Maasai women increasingly practice agency when they gain land ownership (Grabe, 2015), participate in adult education development initiatives (Dutt & Grabe, 2017), or adopt additional income-generating activities (McCoy et al., 2013; Smith, 2015).

Increased livelihood diversification and women's empowerment initiatives simultaneously challenge and perpetuate traditional pastoral gender norms. Increasing women's participation in local political and economic systems often burdens marginalized women with increased labor. As livelihoods have diversified, both men and women have adopted new roles (Barrett et al., 2001). Men are increasingly leaving the community to pursue additional income-generating opportunities and children are increasingly leaving the home to attend school (Smith, 2015). As a result, women have increased their workloads to fill the traditionally male dominated responsibilities of livestock production (Wangui, 2008), and income-generating activities (Smith, 2015). As women have expanded their roles, many still adhere to traditional reproductive roles in the household, meaning that workloads are increasing (Cornwall, 2003). While altered gender roles might empower women, these activities can challenge dominant social and cultural norms of important age-set and gender traditions, causing men to withdraw support of women's empowerment initiatives. Many participatory development initiatives that aim to empower women exclude men or exclude marginalized women, further exacerbating inequalities and feelings of resentment.

Despite such changes, women are still considered subordinate to men (Goldman & Little, 2015) and encounter limited options and opportunities to participate in decision-making (McCoy et al., 2013). A women's ability to access assets, such as land, livestock, information, markets, and education, and practice agency is limited not only by her gender, but also by her age, her wife number, the number of kids she has, her husband's age, and her husband's education (Woodhouse & McCabe, 2018). These gendered disparities that are still pervasive in Maasai society may influence how men and women access and use a phone, as well as the social outcomes from phone diffusion.

3. Study Context

3.1 Research objectives and implications

To determine if and how phones empower women, I ask two research questions. The first research question (RQ1) focuses on Maasai women's experiences in accessing and using phones, while the second research question (RQ2) leverages the knowledge of these experiences to examine the processes of women's empowerment that phones enable and how these processes are embedded in social relations. Here are my specific questions and objectives:

- RQ1: How do Maasai women access and use mobile phones?
 - Objective 1.1: Identify women's perceptions of barriers to, and strategies adopted for, phone access.
 - Objective 1.2: Identify women's reasons for and issues with phone use.
- RQ2: How are Maasai women's phone uses embedded in social relations?
 - Objective 2.1: Identify how social position in the household influences the distribution of resources and practice of agency.
 - Objective 2.2: Identify how phones are related to resource access and decision-making power.
 - Objective 2.3: Identify how social relations influence processes of empowerment that phones may enable.

3.2 Conceptualizing phones in women's empowerment

Women's empowerment, or processes that enhance access to resources and the agency to use those resources to achieve a desired outcome (Kabeer, 1999), represents an important pathway to greater gender equality. The mobile phone is a type of ICT that connects people not only to each other, but also to more types and greater amounts of resources. The spread of phones in developing contexts provides an opportunity for change. For this research, I define phone access as the opportunity to both use and benefit from mobile devices.

To address the research questions described above, my conceptual framework, shown in Figure 1, draws from Kabeer's SRA and Duncombe's (2014) modified version of the SLA. This framework is based on the following parameters: (1) institutional norms create and reinforce social relations; (2) gendered social relations create and reproduce differences in the structural positioning of men and women; (3) social position influences what resources are available to people; (4) resources are the necessary pre-conditions to exercise agency to make strategic life choices; (5) resources and agency together make up people's capabilities; (6) outcomes are the extent to which people live the lives they want based on their capabilities; (7) individual outcomes either contribute to or undermine institutional norms that produce and reinforce gender inequalities. While social position influences mobile phone access, I posit that phones increase access to the types and amounts of resources that are available, which may provide opportunities to renegotiate norms that institutionalize gender inequalities (8).

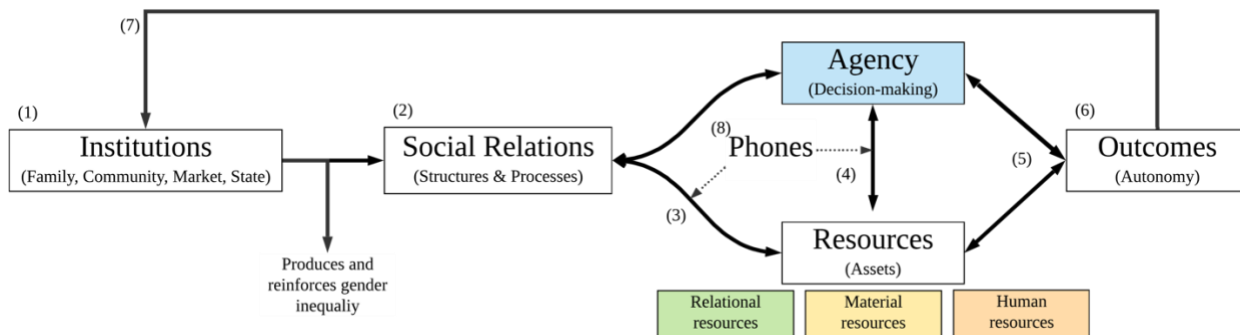


Figure 1. Conceptual model for research adapted from Duncombe (2014) and Kabeer (1994; 1999)

Following Duncombe’s (2014) suggestions to improve the livelihoods and ICT research frameworks, this study adapts the traditional SLA and its livelihood capital into three broader, more ICT relevant livelihood asset categories: resource-based assets (RBA), network-based assets (NBA), and cognitive-based assets (CBA). Resource-based assets, which I call material resources, include physical, financial, and natural capitals that are material or human-made. Network-based assets, which I call relational resources, include social capital such as relationships, group membership, and trust. Cognitive-based assets, which I call human resources, encompass diverse forms of human capital and capabilities. Table 1 provides ICT examples of each type of asset category.

Table 1. Sustainable Livelihoods Framework adaptations for ICTs

SLA Capital Types	Duncombe’s SLA to ICTs	ICT Examples
Physical	Resource-based assets (RBA) -Material resources	Mobile phone handset, SIM, electricity, phone vouchers, signal, financial income, financial services
Financial		
Natural		
Social	Network-based assets (NBA) -Relational resources	Group membership, relationships, leadership, trust, reciprocity, social status, social network
Human	Cognitive-based assets (CBA) -Human resources	Education, literacy, technical/e-literacy, local knowledge, perceptions, skills, capabilities

This project focuses on social relations at the family institutional level in the household to understand how phones fit in with processes of women’s empowerment. I apply the terms assets and decision-making power interchangeably with the terms resources and agency, respectfully.

To answer RQ1, I focus on what material, relational, and human resources women need to access and use a phone, as well as how access to these resources changes as a result of phone access. To answer RQ2, I examine how intrahousehold social position influences the distribution of resources and extent of decision-making power within the household, but also explore norms across different institutions. Specifically, I explore relations between husband and wife and between co-wife and co-wife, and how these relations influence participation in household decision-making, extent of influence of husband, and degree of husband control.

In Maasai communities, intrahousehold structural relationships that determine social position are complex. As Maasai are polygynous, homesteads, called *enkang*, are typically comprised of multiple sub-households, called *enkaji*, that are maintained by each wife of the male household head. Men can be heads of multiple sub-households of their familial unit, or *olmarei*. Familial networks living in the *enkang* are often extended, sometimes comprising multiple household heads, wives of each household head, their married sons, their son's wives, many children dependents, and other extended family. In this research, I equate *olmarei* to the term household, meaning that I examine the relations among the family between the household head and each of his wives. Figure 2 shows how household members interact with each other and with the broader community.

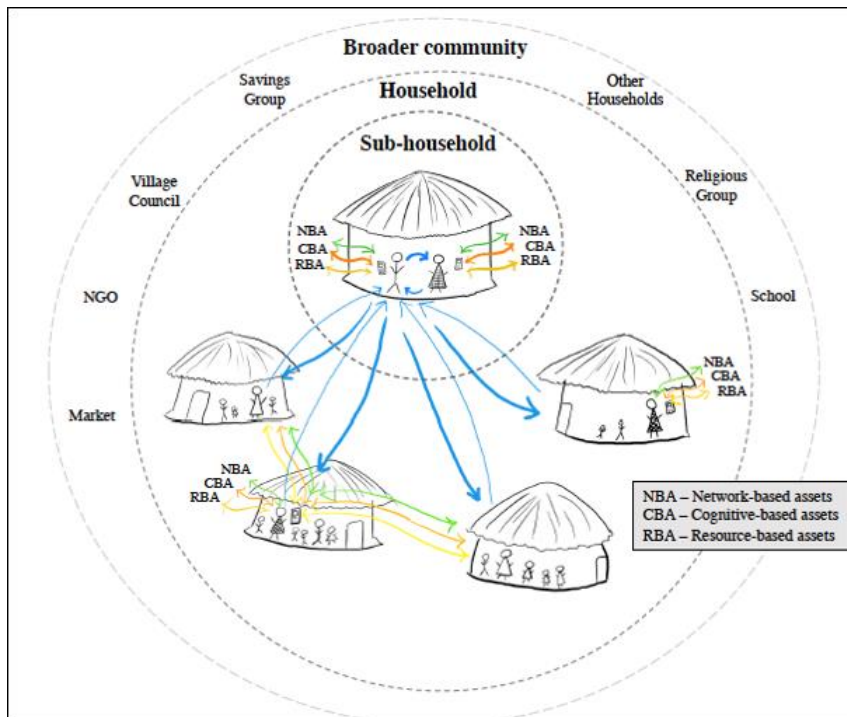


Figure 2. Conceptualizing social relations in polygynous households

3.3 Study site

Simanjiro and Longido Districts in northern Tanzania are ideal sites to investigate how Maasai women use mobile technologies. Research was conducted in five villages (Loiborsoit, Emboreet, Sukuro, Terrat, and Landanai) within Simanjiro District and five villages (Kimokowua, Engikaret, Engushai, Gelai Lumbwa, and Karrao) within Longido District in northern Tanzania (Figure 3). Like much of rural sub-Saharan Africa, Simanjiro and Longido have steadily gained improved access to mobile networks and affordable phones (Baird & Hartter, 2017; Bowen et al., 2010; Sachedina & Trench, 2009). Since these communities are each predominately ethnically Maasai, they share similar cultural norms, including strongly patriarchal practices (Goldman & Little, 2015), livelihood diversification (Baird & Gray, 2014), and shifting gender norms (Wangui, 2008) are some relevant cultural similarities in these areas.

Despite these similarities, communities in Simanjiro and Longido have had different exposure to NGO development interventions (Goldman & Little, 2015), conservation infrastructure (Baird & Leslie, 2013), land privatization (Homewood, 2004), market access (Barrett et al., 2001) and other drivers of change. Simanjiro, removed from arterial roads in the Tarangire-Manyara region, is more remote than Longido which is adjacent to an arterial road that connects Tanzania to Kenya. Simanjiro communities sit east of Tarangire National Park and have slowly adopted agriculture into their traditionally pastoralist livelihood strategies over the recent decades. Communities in Longido, while near an arterial road, vary widely in road accessibility, tourism activity, and agro-climatic zone, which influences opportunities in regards to resources, infrastructure, and expansion of agriculture (Trench et al., 2009). While phone access is ubiquitous across these areas, phone capabilities vary widely based on patchy cellular network coverage and presence of an electrical grid. These similarities and differences make these sites well-suited for investigating the association between mobile phone diffusion and women's empowerment in an agro-pastoralist context. Prior qualitative and quantitative research in the Simanjiro area include annual demographic and economic surveys of male household heads since 2005, a 2010 survey on inter-household use of reciprocal exchange (Baird & Gray, 2014), and a 2014 survey on men's patterns of mobile phone-use (Baird & Hartter, 2017).

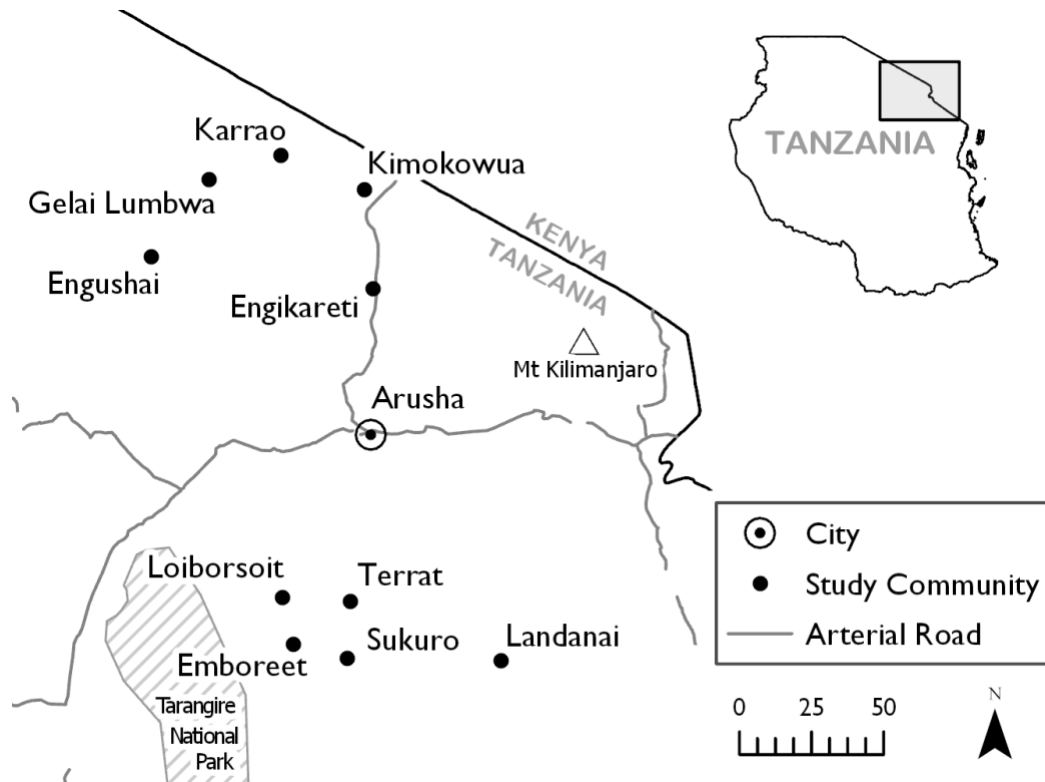


Figure 3. Map of study area in northern Tanzania showing approximate locations of communities

4. Methods

Qualitative and quantitative methods of data collection and analysis were used to address each research question. This study primarily relies on semi-structured group and stakeholder interviews that were collected in the summer of 2018, as well as on some data collected with a structured household survey conducted in October to December of 2018. The following section expands on the methods used to collect and analyze qualitative and quantitative data, and identifies the strengths and weaknesses of this approach.

4.1 Data collection

4.1.1 *Qualitative: Group and stakeholder interviews*

Qualitative data collection methods are well-suited to examining the complex realities, challenges, opportunities, and everyday experiences of people in rural communities (Hanson, 2015). To best identify the mechanisms by which Maasai women access and use phones (RQ1) and experience processes of empowerment within their social relations (RQ2), the research team

and I¹ conducted qualitative, semi-structured group (n = 9) and stakeholder (n = 4) interviews (N=13) with women in the study area over a five-week period in June-July.

Interviews were conducted with women who exemplified a range of lived experiences, including women from different age classifications, households representing different wealth statuses, and wives that exhibited differing degrees of agency in the household and community. Group size ranged from three to twelve respondents for each group interview (approximately 72 women total were involved). Stakeholder interviews were confined to one respondent. Female field assistants fluent in English, Swahili, and Maasai served as translators for the female researchers who conducted the women's interviews. Since cultural and logistical challenges of working in sparsely populated rural landscapes made it difficult to select participants randomly, local informants were used to identify respondents and prearrange interviews. Women that were represented in the in the interviews self-identified themselves into the following age-groups: *Siangiki* (20-30 years, married with children), *Endasati* (33-49 years, with grandchildren), and *Koko* (beyond reproductive age). Data collection also included photographing the mobile phone(s) of each interviewee, if it was available, to document phone type and functionality (Appendix A). Participatory research methods, including a seasonal calendar and social network maps, were implemented in randomly selected group and stakeholder interviews to help facilitate the conversation, validate participants' knowledge, and enhance researcher understanding (Christie et al., 2015; Fortmann, 1996) (Appendix B). Participants were given a small gift of phone vouchers as a symbol of appreciation for their participation.

Interviews focused on women's access to and use of phones (RQ1) as well as their perceptions of how phones influence social relations and how social relations influence pathways to empowerment that phones may enable (RQ2) (Appendix C). Interview templates incorporated key open-ended questions from interviews conducted in 2010 (Baird & Gray, 2014) and 2014 (Baird & Hartter, 2017; Woodhouse & McCabe, 2018), and included new questions that were loosely constructed and refined throughout the qualitative data collection process. Interview questions were semi-structured so that interviewers could discuss, in nuanced ways, women's lived experiences, as well as their women's perceptions on topics associated with phones and

¹ For the women's interviews, the research team consisted of me and at least one female translator, as well as Dr. Woodhouse, a Professor of Anthropology at University College London and Co-Investigator for the NSF/RCUK grant that funded this work.

empowerment, which are subjective by nature, and can vary from group to group. The topics we addressed include: phone access (e.g. barriers and opportunities encountered); phone use (e.g. calling, texting, frequency, reason for using phone); type of communication partners (e.g. Maasai, non-Maasai, birth family, doctor, etc.); use of phone applications (e.g. flashlight, radio, mobile money, etc.); perceived benefits and challenges of phone use; extent of participation in household decision making; use of mobile phones in livelihood activities; intrahousehold relations among co-wives and husband; participation in community or marketplace space; and women's empowerment. In addition to providing valuable data on women's experiences, the information collected in interviews was also used to inform the development of two household survey instruments: one for the male household head and another for one the head's wives.

4.1.2 Quantitative: Household survey

To examine the relationship between phone access and measurements of women's empowerment, we conducted a structured household survey of the male *olmarei* head and one of his wives (i.e. one of the *enkaji* heads). This study draws on certain data from the structured household surveys of the female *enkaji* head (N = 258). Approximately 40 women per village in Simanjiro and 25 women per village in Longido were surveyed. Based on information solicited in the qualitative interviews, surveys were developed through collaboration with the researchers and the local research team. Surveys were written in English and Swahili, and orally translated in Maa by the interviewer where appropriate. Surveyed households were selected based on participation of the male household head in previous studies to create a longitudinal dataset (Baird & Gray, 2014; Woodhouse & McCabe, 2018). A local research team consisting of four female interviewers fluent in English, Swahili, and Maa conducted the surveys in private spaces at the interviewees' *enkang*. Women respondents were selected if they were available during the time of the interviewers' visit to the *enkang*.

While the survey collected data on socio-demographic information, phone and face-to-face communication patterns, reciprocal exchange, agency, and decision-making, this study reports data on phone use (Appendix D). Phone ownership, type, voucher amounts, days without charge, and whether the phone checks or takes the phone away are some of the key questions that are reported. While this research draws from the surveys, this thesis primarily centers on the qualitative data collected during the interviews.

4.2 Data analyses

Prior to data analysis, I transcribed all notes and recordings that were taken during the interviews. All interview transcripts were analyzed with ATLAS.ti using deductive and inductive approaches to identify themes and key causal mechanisms. Deductive analysis was guided by topics referred to in our research question objectives. In this case, deductive coding focused on: identifying women's perceptions of barriers to and strategies adopted for phone access (RQ1); identifying women's perceptions of reasons for and issues from phone use (RQ1); and identifying how women's experiences in resource access and decision-making (RQ2). Analysis was also inductive during the coding process as emerging ideas and themes were tested iteratively. Inductive coding focused on: identifying how intrahousehold social position influenced resource distribution and practice of agency (RQ2); and how social relations influence mobile phone access. For survey data, descriptive statistics of key questions were used to identify trends and patterns of phone use.

4.3 Strengths and limitations

A central limitation with the qualitative methodological approach is that we rely on local informants to identify interview respondents. The process of local informants identifying households to conduct the interview, contacting community members, and eventually conducting the interview with any women that were available, may result in a non-representative sample of Maasai women. In addition, contextualizing polygynous intrahousehold dynamics presented a methodological challenge to systematically collect data and capture the voice of diverse household wives. While we attempted to stratify all interviews so that only one woman from each household was present, cultural norms and logistical challenges required us to include all women that were present in the *enkang* in our interviews. This meant that for some interviews, co-wives and mother-in-laws were present, which may have hindered open and honest conversation. Quantitatively, a limitation of our approach is that surveys were conducted with only one wife within the *enkang* who happened to be present during the time of the survey. Since wives within the same *olmarei* have different experiences, relying only one wife's perceptions fails to represent the experiences of all female sub-household heads in the *omarei*. Another limitation of our quantitative approach of this study is we focused on the role of gender in the

relationship between mobile phones and agency, and did not consider other variables that might explain variations in experiences, such as time of year or economic status.

A central strength of this study is that it is groundwork data collection regarding Maasai women's use of mobile phones. While some studies have examined phone use in rural Africa, this research recognizes gender as an important variable (Rocheleau et al., 1996) and provides a qualitative assessment of women's experiences with new technology. This may lay the foundation for future qualitative and quantitative examinations of this group. Another notable strength is that the research team has an established positive relationship with the communities. Since research is built off of prior qualitative and quantitative data that has been collected in the area since 2005, researchers can use the data collected to create a longitudinal data set. Additionally, this study didn't rely on a household head to report attitudes, experiences, and knowledge of individual household members. Interviewing female members within the same household elaborated on or revealed previously masked information, particularly information regarding women's experiences within the household.

5. Findings

Content analysis of the qualitative interviews on Maasai women's experiences with mobile phones revealed several general themes: (1) phone access is not just phone ownership, but is contingent on additional material, human, and relational resources that allow women to use and benefit from mobile devices; (2) men mediate access to many resources and strongly influence household norms, and thus guard women's access to phones; (3) women rely on varied strategies to navigate the opportunities and challenges introduced by mobile technology; and (4) women have varied reasons for, and issues derived from, phone use. Below, I expand on these themes within the context of Maasai women's experiences, and then identify patterns of phone use using descriptive statistics of phone access and use measures.

5.1 Beyond ownership: Phone access requires additional resources

Our findings draw attention to the considerable variability in phone access and use across the study area. While a majority of respondents owned a phone during the time of the study, handset ownership did not directly translate into accessing phone capabilities or guarantee

access. Additional material, human, and relational resources were needed to bridge the gap between ownership and access.

5.1.1 *Material resources*

Women perceived material assets as the most constraining resources needed for phone access. Essential materials include phone handsets, electricity, vouchers, and subscriber identification module (SIM) cards, as well as the money to purchase these resources. Women acquired phone handsets in a variety of ways. While some respondents shared that they purchased the phone with their own money, the majority of women relied on their husband, child, or other community members to purchase a phone for them. Regardless of whether a woman owned a phone or not, many respondents reported that they regularly borrowed a phone from someone in their social network, such as their husband, child, co-wife, or friend. Even if a woman owned a phone, obstacles to access electricity, vouchers, and money prevented many respondents from actually using their phone.

Access to electricity is imperative for phone use. Respondents reported that they relied on both on-grid and off-grid electricity sources to charge their mobile devices. While few communities in the study area were connected to the national power grid, some respondents relied on shops in the village center that were connected to the grid to charge their handsets. The majority of respondents who owned a phone relied on off-grid electricity sources such as solar energy located in local shops, nearby *enkang*, or their own *enkang*.

SIM cards and vouchers, or phone credits to access network provider subscriptions, are other resources that are necessary to benefit from phone ownership. Many of the respondents who owned a phone had multiple SIM cards (Figure 4). Women rotated between SIM cards based on cellular signal, available vouchers, and best subscription deals. Women acquired vouchers in various ways. Many women reported that they purchased their own voucher. A lot of respondents received a weekly voucher allowance from their husband or were given vouchers from their sons. Some respondents shared that they borrowed vouchers from the phone carrier that had to be paid back. Many women admitted to relying on “beeping” to communicate. “Beeping” is when a phone user either calls a number and immediately hangs up or sends a pre-negotiated instrumental short message service (SMS). Since “beeping” is free for phone users

who have a small amount of credit on their phone account, women frequently use “beeping” to request another phone user to call them back immediately.

Lack of money to purchase essential materials presented a common challenge for many of the respondents. One woman made a comment during a group interview that exemplified the significance of money: “But first is the challenge of having the money. If you don’t have, then you stop communicating.” Many women perceived that they did not earn enough money to purchase the materials required for phone use because they felt they had to prioritize purchasing food, domestic goods, and other necessities to improve the household, or give money to their husband. Even if money was available and allocated for phone materials, the time it took to acquire material resources presented an additional challenge for women to access a phone. One respondent described the challenge of traveling a long distance to the local charging shop only to find “congestion” from high demands: “You may go to the charge place, sometimes there [are] many phones so you have to wait...to charge. It can take a day or more.” The time required to take a phone to the shop and to wait in line for the phone to charge meant that a phone could be without charge for multiple days during the week (Figure 5).

5.1.2 *Human resources*

Women also encountered challenges due to inability to use, and even learn how to use phones. Several factors limit women’s phone uses to basic phone functions like calling and SMS. Lack of literacy and education more broadly served to restrict use to phone applications like the radio, calculator, flashlight, and camera. Women who lacked literacy found it difficult to use phones for texting. While many women owned internet-capable phones, they didn’t know their phone could connect to the internet and often lacked the technical literacy to use internet-based applications like Facebook and WhatsApp (Figure 6). In addition to this constraint, common misunderstandings about what internet applications are, how to access them, and what they are used for discouraged many women from using them. Mobile money and memory cards for music and video were also widely used, regardless of if a woman was educated. Many respondents shared that they learned how to use the phone through their social relationships.

5.1.3 Relational resources

Perhaps unsurprisingly, women rely on their social relationships and networks to access and use phones. This dependency manifested in various ways. Respondents shared that when they were unable to acquire phone infrastructure themselves, they depended on their husband, co-wife, mother-in-law, neighbor, children, friend, or birth family to supply these resources. Women who could not purchase phone voucher relied on “beeping” to communicate or borrowed voucher from the phone carrier. In addition to material resources, women also depended on their social network to acquire essential human resources in the form of actual literacy and technical literacy. Respondents who lacked literacy reported relying on their children or friends to translate and write text messages or simply did not use SMS. Women learned how to use various applications from other friends who owned phones. While social relationships were essential for many women to access a phone, relations, especially with men, also mediated and oftentimes inhibited phone access.

5.2 Men are gatekeepers to phone access

Our interviews with women and my subsequent analyses drew out a commonly encountered barrier to phone access: men mediate asset access and influence household norms. Women expressed how patriarchal practices are most acute at the household level where the husband exhibits considerable authority over resource distribution, participation in household decision-making, and social position of other members within the household. Women shared how the husband shapes the experiences of his wives. On one end of the spectrum, he could permit phone access and provide both the resources and permission needed to use a phone. On the other end, he could also prohibit phone access and deny resources for phone access. One respondent described how it is up to the husband, and not the wife, to decide if and when to initiate *maape tenebo*, or cooperation and working together:

[We] like how other tribes and cultures cooperate and make decisions together, but [we] don't have that...[We] need cooperation with man and instead of man saying, 'you don't even have a cow,' a man can give *maape tenebo*.

Cooperation, or lack thereof, influenced the ways women accessed a phone. While women expressed a wide array of experiences, both positive and negative, men were considered a primary channel for phone access.

5.2.1 *Men mediate resource access*

Women's responses during our interviews communicated clearly that men mediate access to the resources women need to use a phone. Women reported that in most cases they did not control the acquisition of phone infrastructure and instead were beholden to the men in their social network. While some women indicated that they were able to purchase a phone for themselves, the majority of respondents received a phone from their husband or their adult son. Some women did not feel they had ownership of their phone, regardless of whether they purchased the phone themselves or not. Instead, these respondents felt that their husbands had ultimate control over whether or not they could own or access a phone. Phone access was subject not only on the availability of essential resources, but also to the discretion of the husband.

The implications of this lack of control were expressed in various ways. One woman spoke of how long it could take to receive a phone from the husband: "it can take months or years." Another respondent felt hesitant to acquire a phone because her husband told her that she "should not use the phone." One respondent described how some women give their phones to a son or other family member when their husband expresses discontent over his wife owning a phone in order to keep it safe and unavailable to be confiscated. Other women expressed fear that their husband would check their phone or take the phone away from them if there was a quarrel.

One respondent succinctly described the ramifications of her husband's displeasure with her phone use: "if the husband takes the phone away, the woman is without a phone and without communication." Many women expected and accepted that the husband would regularly browse phone messages in search of numbers he did not know. Women explained that punishments for speaking to someone whom the husband did not know or approve of could include the loss of the phone or even a beating: "Others get a mobile phone from their husband, but then he takes it away from her because he found a new number." The translator described the experience of one respondent from a stakeholder interview: "her husband beat her when she first got a mobile phone and asked why she bought the phone." Some respondents did not own a phone during the time of the interview, but had owned a phone at one time that was broken (usually dropped in a water basin), stolen, or taken away. Respondents who lost a phone that was given to them by the husband shared that they did not have the confidence to ask their husband for another phone because they were afraid.

5.2.2 Men influence household norms

Women's access to phones is also affected by men's influence over the household, specifically the wives and their children. Women described intra-household inequalities they encountered because the husband predominately determines rights, roles, and responsibilities of other household members. For example, women reported that in many households, the husband decides which children he will help pay school fees for, which wife will receive sugar, when a wife needs to contribute to livestock healthcare fees, and which wife he will listen to for decision-making. Since men are considered the leaders of the family, women perceived that it was up to the husband to decide if he wants to listen to the opinions of women. Women described how every family was different, but how it was the role of the man to determine who contributes to decision-making, who gets what resources, and who gets to exercise autonomy. One respondent described: "there are families where men make decisions on their own and families where they jointly make decisions. Some women are involved and some women are not." Women expressed frustration in unfairness that was a result of men having more autonomy and decision-making power inside the *olmarei*:

[Women] do not own anything. No cows, goats, or anything. Do not own farm or maize. Can't do anything without telling the husband first. [Women] must inform husbands if do anything like go to the market. If they don't, they will be punished. Men are free without asking for permission.

The extent of husband's influence over norms was primarily illustrated in descriptions of the household where favoritism contributed to inequalities in resource access and extent of participation in household decisions. Respondents understood that within an *olmarei*, each wife had a certain sociocultural ranking as determined by her husband and societal norms. Women reported that, whether there were two wives or ten, there is a favorite wife, the *endida*, and a least favorite wife, the *endingi*. Women shared how the *endida* is the husband's "beloved one" who receives special treatment. As the favorite wife, the husband provides her with greater access to more items, such as domestic supplies, food, or phone voucher, than other women in the *olmarei*. However, her role as the favorite wife means that the husband exerts more control over her. Respondents shared that the husband was more likely to check and take away the phone of an *endida* than another wife in the household. In order to not disappoint her husband, an

endida may elect not to leave the house, engage in income-generating activities, participate in community groups, or talk to new people without her husband's permission.

Interview respondents noted that other wives, especially the *endingi*, exhibit more autonomy in a household. As the least favorite wife, the *endingi* doesn't worry about disappointing the husband or asking for permission. The *endingi* is able to own a phone, talk to whomever she wants, and participate in business and community groups without her husband interfering. A social network map of an *endingi* compared to that of another wife illustrates how the *endingi* is engaged in more community groups and business activities (Figures 7 and 8). While there may be other factors, such as age or education, that support the *endingi* and contribute to greater autonomy and engagement in the community, respondents were convinced that *endingi* didn't worry about what her husband thought of her and her activities. It is important to note that just because an *endingi* has more autonomy doesn't mean she will necessarily exercise it to engage in activities that enhance access to resources. While respondents could very clearly delineate between the *endida* and *endingi*, descriptions of lived experiences for other wives were varied. No respondents admitted to being the *endida* (which is consistent with cultural norms among Maasai), but were open to claim their title as *endingi*. During the interviews, women described the *endida* as a manipulative woman who didn't want to help other wives in the *olmarei*.

While men, especially husbands, mediate phone access for many women in the study area through resource control and favoritism, respondents reported a large variety of experiences regarding extent of husband control. Some women did not encounter any challenges from favoritism or in acquiring resources needed to use a phone. Others had never been allowed to use a phone before or had their phone taken away. Some husbands inhibited phone access and others encouraged it. While this study did not examine what determines how controlling a husband is, one respondent believed that education and the community played a significant role:

The difference of control is in the education and the influence of the community. If a man is seen giving freedom to women, other men will criticize him saying that the woman has control over him...An uneducated man will submit and change due to credibility with friends. An educated man keeps quiet.

While some women perceived education as a driver of improved marital relations, other women believed that education helped men to have more control over women. As one

respondent described, “the educated are the ones searching the phone. They take the phone, they peruse it.” Age was also perceived as a factor that determined how influential a husband was over phone access. Older husbands were less likely to gift, check, or take away a phone. The younger *Korianga* (male age-set for 21-35 years) and more educated husbands were thought to be more likely to provide and take a phone: “The *Korianga* are the ones helping the wife, giving them phones...but they can also take [the] phone ...and check who they [are] communicating [with.]” Regardless of how controlling the husband was, respondents developed various strategies to safeguard phone access.

5.3 Women develop strategies to overcome barriers

As women navigate the opportunities and challenges introduced by mobile technologies in this environment, they must develop strategies to overcome the obstacles they encounter if they choose to access a phone. As described above, women reported that resource variability and husband control were barriers that they encountered frequently. Resources that may be available one day may be inaccessible the next. Money to purchase voucher and electricity may be abundant during harvest season, but constrained during the long dry season. One day, a woman may be able to afford purchasing phone vouchers but have to wait a whole day before her phone is charged at the local shop. Similarly, a husband may permit his wife to use a phone in the morning, and then may take that privilege away in the evening. A woman may be able to call a farmer about selling beans in the morning, only to have her husband take her phone away for calling a number he isn’t familiar with. Regardless of the challenges they encounter, respondents shared that they developed strategies to access a phone.

5.3.1 Resource variability

One adaptation women identified to overcome limited and variable access to resources was to participate in independent income-generating activities beyond their normal responsibilities. As many respondents explained, money is essential to purchase the materials needed to communicate with a phone, and small business is a way to make money. One woman described how business incites hope: “Even if the husband is harsh, women can find income generating activities.” Respondents described the array of businesses women have undertaken to generate income, including selling milk, chickens, eggs, homemade jewelry, sugar, soda,

agricultural products, domestic goods, or tea. Women who owned small solar units in their *enkaji* can make money by selling electricity to charge others' phones. Some respondents described working farms or cutting grass. By diversifying their income streams, women can reduce their dependence on their husbands. One group of women described the autonomy business as allowed:

There is struggling as a woman. But if [women] do business, they feel stronger because they have capital. They can purchase stuff like school supplies and pens for the children. Women used to depend on their husbands, but now they feel strong because they have opportunities to get their own money.

Women who conducted income-generating activities did identify limitations. Women shared that wives within the same *olmarei* typically engage in different economic activities. This may limit opportunities for women in the household if one wife is engaging in an activity that another wife is interested in. As is shown in the seasonal calendar activity, seasonal fluctuations also influenced income flow (Figure 9). Women perceived that income flow was highest during the months of March to July between the rainy season and the dry season. This is the time when women have financial resources to allocate towards business activities, phone voucher, electricity, school fees, or other household items. Expenditures for women were highest during the driest months of the year from September and December because this is when they don't make money from selling milk. These months were considered the most constraining times for women. As one respondent described, "the livestock is skinny and there is no market for livestock" and thus little money is exchanged throughout the community. Respondents also highlighted the challenges surrounding pregnancy and infant care as barriers to engaging in business activities.

Another strategy, women noted, to gain access to resources is to participate in community groups, especially savings and loan groups. Respondents described three primary types of associations that women were active in: livestock groups, village-community banks, and merry-go-rounds. Livestock groups, commonly called *kikundi cha mifugo*, are a type of cooperative where a small group of women contribute money to purchase young livestock (typically calf or kid), raise the livestock together, and share the profits when the grown animal is sold. Village community banks, or *vicoba*, are a formal savings group that has both male and female members. Merry-go-rounds, called *kibati*, are a type of informal *vicoba* where small group of friends or

neighbors, typically all women, contribute money to a savings fund each week and take the money on a rotational basis. Respondents noted that these groups allow women to engage in activities outside of the household and develop business relationships with other women.

5.3.2 Controlling husbands

Respondents also described strategies women have developed to overcome barriers associated with their husbands' control. Some women hid the phone away from their husbands so that they would not take it away. Other women would not answer the phone if it rang when the husbands were around, instead claiming that the network was bad. Other respondents would simply ignore their husbands demands and continue using their phones. Other women relied on borrowing phones from their friends or neighbors if their husbands disapproved of them having phones or took phones away from them. However, we learned that social position in the house plays a role in whether or not a woman would be willing to go against her husband's wishes. Some respondents noted they were willing to disregard husbands who did not wish for them to use phones, but others were not willing to disappoint or anger their husbands.

5.4 After access: patterns of phone use

Our discussions revealed women's reasons for and issues derived from phone use. Just as experiences with phone access are diverse across the study area, reasons for and challenges derived from phone use also varies. Many respondents reported that the primary reason for using a phone was to maintain relationships and manage challenges. Far fewer women reported using the phone to engage in new activities. While many women didn't perceive any issues from using a phone, others noted how phones have caused problems from addiction and breaking relationships.

5.4.1 Women use phones to maintain relationships and manage challenges

Women reported that they primarily use the phone to maintain relationships with people they already know. While respondents described many reasons for using phones, including talking with relatives about health, calling motorbike taxis to visit the clinic, and ringing teachers to hear updates on their children's status at school, women perceived the phone as a tool more useful for communicating with friends, family, and community members. Women who owned

phones reported feeling closer to friends who also owned phones because they could talk every day. Even though many women rarely, if ever, visited their birth families, women with phones can still feel close to those groups.

Beyond using mobile devices to maintain relationships, women also used phones to manage challenges and seize new opportunities. Women noted that phones facilitate the exchange of materials and information that help respondents to manage challenges. Women use phones to call their brothers or sons to ask for money when finances are a problem. Some respondents offered that they receive remittances from their husband through mobile money services. Other respondents highlighted that they use phones to determine the whereabouts of lost livestock. Some women rely on phones to exchange gifts for special occasions or to acquire or pay back a loan. One respondent described how phones help women to manage household issues:

Mobile phones make it much easier. Mobile phones help women in family roles. If [a woman] needs something, [she] can ring for a loan without bothering the husband. If she needs a lot of money, she will tell the husband. If she needs a little money, she doesn't need to tell the husband.

In contrast to the large number of respondents who reported using a phone to manage challenges, far fewer respondents reported using the phone to seize new opportunities. While many respondents noted that they did not use phones in their business activities, some respondents did report using phones to maintain relationships with business partners or to communicate with clients. Some women also used the phone to participate in community groups, especially if they missed a meeting. In one group interview, women described how they used the phone to call friends and exchange ideas about development to improve their community and their lives.

Respondents did not perceive phones as tools to help develop new relationships. Most respondents shared that they only talk on the phone to people they know well and only add phone numbers of relatives or close friends. When asked if they speak to non-Maasai on the phone, many respondents laughed at the question, saying that they strictly did not talk to non-Maasai at all. Others were willing use phones to talk to non-Maasai doctors, church leaders, or teachers that they had already met face-to-face and with whom they had an established business

relationship. Women were also adamant about not speaking to men who weren't their husbands or family members, especially on the phone.

5.4.2 *Issues of addiction and damaged relationships from phone use*

Respondents listed both growing addiction and damaged relationships as the greatest negative issues associated with phone use. While addiction was described as a relevant issue for women from all age-groups, respondents believed that phone use facilitated the most turmoil for young girls still in school. One respondent described how some girls drop out of school without parental approval as a result of using phones to communicate and develop relations with a man. Other women perceived their own addiction to their phones as a significant challenge, especially when they felt disappointment if they were unable to access the phone: "sometimes people are addicted to their phones so when the charge is getting low, they are becoming disappointed." Perhaps more serious than addiction, many respondents commented on the role phones play in breaking relationships. Several respondents saw phones as devices that can "wreak havoc" in marital relationships and break a family apart when a husband checks his wife's phone and finds a new number that he doesn't know.

5.5 Quantitative descriptions of phone use

Descriptive statistics from surveys of 258 female *enkaji*-heads highlight the considerable variability in phone access and use patterns for women across the study area. As Table 2 shows, 178 (69%) of survey respondents owned a phone during the time of the study. Of the respondents that did not own a phone, 31 (39%) had owned a phone at one time that was broken (42%), stolen (26%), taken away (20%), or given away (6%).

Responses to phone use questions of the 209 women who owned a phone during the time of the study or had owned a phone at some time are reported in Table 3. 99% of this group reported that they owned a basic phone, and none reported using an internet-capable phone. This question relied on the respondents' knowledge of what type of phone they own, meaning that if a respondent's phone was internet-capable but the respondent was unaware or did not know how to use internet applications, the respondent may have responded erroneously to this question. In a question regarding who bought their phone, 71% reported that their husband purchased the phone for them, 20% bought the phone with their own money, and 7% owned a phone that was

purchased by their son or other child. For phone voucher, 43% of respondents bought their own voucher, and the remaining 57% relied on others to acquire voucher. Almost 40% of the respondents borrowed vouchers from the phone carrier that had to be paid back or else they would lose SIM access.

Responses to questions regarding electricity and phone charge also illustrate variability in women's experiences. As much of the study area is not connected to an electrical grid, 94% of women used solar energy to charge their mobile handset. The majority of respondents used a solar device in their own *enkang* (45%) or a nearby *enkang* (32%). Far fewer respondents (20%) relied on small shops to charge their phones. One question addressed number of days the respondent's phone was without charge in the seven days prior to the survey. Almost three-quarters (74%) of the women had a phone that was without charge for at least one day, with the majority (57%) of respondents reporting that their phones were without charge for one to two days.

To identify patterns in phone access related to extent of husband control, questions addressed whether or not the respondent's husband checked or took away their phone. Of the respondents that owned or had owned a phone, 32% had a husband who checked their phone, 25% had a husband who took the phone away once, and 23% had a husband who took the phone away more than once.

Table 4 reports on survey questions related to borrowing phone handsets. Over half of all women (54%) borrowed a phone from someone in their social network to make a call or send an SMS, regardless of if they owned a phone or not, in the seven days prior to the survey. Of the respondents who borrowed a mobile phone, 31% borrowed from their husband, 6% borrowed from a brother, 13% borrowed from a son or child, 16% borrowed from another wife in the household, 19% borrowed from a friend, 7% borrowed from another member in the community, and 8% borrowed from multiple people.

Table 2. Responses to phone ownership questions

	Frequency	Percentage
Own phone	N=258	
Yes	178	69
No	80	31
Ever own phone	n=80	
No	49	61
Yes	31	39
Why no longer own phone	n=31	
It broke	13	42
Stolen	8	26
Husband took it away	6	20
Gave it away	2	6
Other	2	6
Sold it	0	

Table 3. Responses to phone use questions if owned or had owned a phone

	Frequency	Percentage
Phone type	<i>n</i> =209	
Basic	207	99
Internet-capable	0	
Smartphone	2	1
Bought phone	<i>n</i> =209	
Husband	148	71
Myself	41	20
Child	15	7
Brother	0	
Other	3	1
Multiple people	2	1
Pays for voucher	<i>n</i> =209	
Myself	90	43
Husband	85	41
Multiple people	30	14
Child	4	2
Brother	0	
Other	0	
# SIM cards	<i>n</i> =209	
Two	114	54
One	95	45
Typical charge source	<i>n</i> =209	
My <i>enkang</i> (solar)	94	45
Other <i>enkang</i> (solar)	64	32
Shop (solar)	28	13
Shop (electricity)	14	7
Other	9	4
# days phone without charge in week	<i>n</i> =209	
0	55	26
1-2	120	57
3-4	31	15
5+	3	2
Husband ever check phone	<i>n</i> =209	
No	141	68
Yes	68	32
Husband ever take phone	<i>n</i> =209	
No	109	52
Yes, once	52	25
Yes, more than once	48	22

Table 4. Responses to phone borrowing questions

	Frequency	Percentage
Borrow phone	N=258	
Yes	140	54
No	118	46
Who borrow phone from	n=140	
Your husband	44	31
Friend	27	20
Another wife	22	16
Son/child	18	13
Multiple people	11	8
Other	10	7
Brother	8	6

6. Discussion

These findings reveal several themes in women's experiences with phones as well as the processes of empowerment, or disempowerment, that phones may enable. In their use of phones, women are not independent of men. This discussion expands on this idea by offering five contributions to the literature on mobile phones, women's empowerment, and agro-pastoralists in developing contexts: (1) phone access for women is fluid (RQ1); (2) there is no single pathway between phone access and empowerment, but rather multiple pathways (RQ2); (3) men use women's phones as rewards and punishments to reinforce existing inequalities (RQ2); (4) women are not a monolithic group (RQ2); and (5) women use phones to help maintain and strengthen existing relationships, not diversify them (RQ1). Each of these contributions illustrates how men are inextricably linked to women's empowerment.

6.1 Phone access is fluid

Phone access for women is fluid. Institutional arrangements that place women in subordinate social positions create an environment where phone accessibility is unreliable. Inconsistencies in phone access are primarily due to the extent of men's control and resource variability. As noted, women's use of phones is not independent of men. While many women rely on their husbands or sons to provide material resources, each woman relies on the consent of her husband to use a phone without fear of punishment. As the head of the household, a husband possesses authority over his wife's phone access and use. How he chooses to exercise this authority influences his wives' phone-use. He may deny his wife the freedom to communicate with people he does not know and take the phone away from his wife if she transgresses. Alternatively, a man may permit his wife to communicate with these types of people for business activities and actually provide her the phone vouchers she needs to run her business. This dependency on husbands creates uncertainty surrounding phone access for women. While the extent of control in a marital relationships may vary among different men, it also may vary for individuals based on time or partner.

While some Maasai women have more controlling husbands than others, all women suffer insecure access to phones due the inherent variability of resources like money, electricity and vouchers. As they negotiate competing pressures within the household, especially

surrounding their husbands, other household members, resource availability, and their own personal choice, women must continually strategize how they are going to access and use phones. Women may have the financial means to purchase material items for phone use, but have to unexpectedly spend that money on food, child healthcare, or livestock health. Social relationships, while important for enhancing access to resources, also introduce inconsistencies. High dependence on others may actually make women more vulnerable to losing their access to phones. If a friend, child, or brother whom a woman relies on to read text messages or provide vouchers cannot or chooses not to provide assistance when requested, a woman must either do without her phone or develop another strategy for access.

The fluidity of resources, which can be driven by gendered power imbalances and resource variability, isn't considered in SLA. This framework maintains that as people access various capitals, they will be empowered to influence structures and processes (Scoones, 1998). However, this study illustrates how resources needed for phone access that may be available one day may be unavailable the next, which may have significant implications for the potential of phones to help transform institutional norms. While this study concerns phones, fluidity may also be relevant for other types of resources. Empowerment frameworks, in contrast, emphasize the socially constructed and fluid nature of power and how this fluidity influences resources and opportunities for women (Mosedale, 2003). As power is socially constructed and fluid in nature, paths from mobile phone acquisition to improved livelihood outcomes are also varied and dynamic.

6.2 Empowerment from phone access is not linear

There is no single linear relationship between phone access and empowerment, but rather a multitude of relationships. Phone access does not necessarily lead to empowerment and becoming more empowered does not necessarily support greater phone access. In patriarchal Maasai communities, phones have not afforded the large-scale transformation of gender relations, but have permitted some women more power and subjected some women to lower levels of power. The types of power enhanced or diminished from phone access varies. As respondents shared, some women may exercise more agency to communicate with people through phones, but others may be denied phone access after becoming accustomed to using phones. Some women may talk to teachers outside their region, while others do not have the

freedom to move around outside of the household. Even the same woman can use a phone to enhance her power with others in business activities, but lose power from within her household if her husband chooses to punish her. Other women may use a phone to challenge patriarchal norms, while others accept the status quo.

Variety in women's experiences highlight how the association between phones and empowerment is complex and nuanced in nature, and is shaped by social relations and personal choice (Batliwala, 2007; Gigler, 2004; Huis et al., 2017). While phones may enable increased access to resources for some individuals, greater access to these resources doesn't guarantee a transformation of underlying structural gender relations that exist at the household, community, and broader societal levels. For women's empowerment to occur, norms need to be challenged at all institutional levels in both public and private spheres. As Wyche and Olson (2018) state, phones may benefit some women, but have yet to transform lives across multiple scales. Even though phones may provide women opportunities to challenge patriarchal norms, longstanding institutional barriers continue to persist and prevent women from seizing these new opportunities. Changes in the flow of power are dependent on both the behaviors of men and women.

6.3 Phones can be leveraged to exacerbate inequalities

Men may use phones as both a reward and a punishment to reinforce existing gender inequalities. While phones may permit access to different types of assets, they are just another platform where power is contested. Since women are often in subordinate positions to men, men can leverage phones as a weapon that can be used for control. This is exemplified through phone addiction. Addiction to phones creates an opportunity for men to control the actions of their wives. A husband may exert his authority in the household by allowing his wife to own a phone for her personal use for a few months, but then decide that he wants to take the phone away. He can leverage the phone as a punishment for behavior that he does not condone or as a reward for behavior he deems okay. Once a phone is taken away, a woman must resort to begging her husband or other members in her social network to use a phone, which increases her vulnerability. Beyond access, women may choose not to use phones in certain ways out of fear that their husbands may punish them. Instead of providing women with the resources to make

decisions to achieve a desired outcome, phones are a resource that men control access to and use of, providing men the opportunity to leverage phones to either empower or disempower women.

However, it is important to note that women may also use phones to challenge the authority of their husbands. An *endingi*, as the least-favorite of a man's wives, may choose to use a phone in spite of her husband's wishes. Other women may simply use their phones in secret to quietly challenge patriarchal norms. Also of importance to acknowledge, not all men leverage phones as a form of punishment and reward. Some men may permit phone access, and others may deny it. Men's characteristics and identities based on age, education, and participation in community likely play a role in extent of control. More work can be done to understand how men's characteristics influence women's experiences. Just as men differ, women also experience constraints and opportunities differently. While the SRA analyzes existing cross-cutting inequalities that women experience as a homogenous group, it is also important to consider heterogeneity among women.

6.4 Women are not monolithic

Findings illustrate how women experience differences in their social positioning. This intersectionality of women influences phone access and pathways to empowerment. Consistent with Hodgson's (2005) work in Maasai communities, this study illustrates how inequalities don't simply exist between men and women, but also occur between and among women of different ages, ethnicities, educations, or even their sons' statuses in the community. Elder women, many of whom are illiterate, may encounter challenges to phone use that educated, young women don't face. Non-Maasai women who marry into Maasai *olmarei* may be viewed differently than other women in the household. Both the number and status of a woman's son in the community influences what resources a woman may have access to. This study in particular highlights the magnitude of favoritism on not just phone access, but power relations. As Yurco (2018) notes, intra-household dynamics demonstrate the complexities in the negotiation of power in polygynous communities. Favoritism in polygynous relationships creates structures of power created by men, so that when a woman has power, she may disempower other women. An *endida*, situated in a higher social position, has the power to influence her husband to grant her more access to resources than her co-wives. However, enhanced access to resources is gained in exchange for autonomy as she may lose the freedom to practice agency in movement beyond the

household or participation in community groups without permission from her husband. In contrast, the *endingi* forgoes better access to resources from her husband in exchange for more autonomy. Some *endingi* may leverage greater autonomy to partake in income-generating activities or community groups that increase access to resources. The negotiation of power is constantly in flux, but underlying gendered socio-cultural norms generally provide men the ability to determine how power is distributed within the household. As Hoan, Chib, & Mahalingham (2016) emphasize, an intersectionality lens needs to be considered in ICT development interventions for women's empowerment. A sweeping generalization that all women are impacted the same by the spread of mobile phones fails to account for differences in the way individuals experience social structures differently due to their own various overlapping identities.

6.5 Women do not diversify their social network from phone use (yet)

My findings also show that women primarily use phones to maintain and strengthen existing relationships instead of creating new ones. Women in the study use phones to communicate with their husbands, children, mothers, fathers, sisters, brothers, friends, and neighbors. Phones provide women opportunities to strengthen this bonding social capital in existing relationships (Patulny & Lind Haase Svendsen, 2007). With a phone, a woman can call members from her birth family who live in a different area to chat about general well-being or to request financial assistance. She can message her husband when he is out of town or call her child's teacher in Arusha. She has the freedom, when the necessary resources are available, to communicate with the people she wants to help achieve a desired outcome. While some women use phones to conduct income generating activities and participate in community groups to improve financial security, the majority of women do not use phones to directly access material and human resources. Instead, many women leverage phones to request assistance from their social relationships. Thus, women indirectly use phones to access the resources needed to manage their roles and responsibilities in the household. Most women did not use the phone to develop new relationships with different types of people outside of their homogenous social network, except through business exchanges. This bridging social capital is what provides access to external assets and information that may introduce new ideas and opportunities that challenge the status quo. Since few women use phones to access bridging capital, few opportunities exist

for the spread of information that challenges existing gender inequalities. As the findings indicate, Maasai women have yet to experience greater diversity from phone use. Although studies have yet to show that men are diversifying their social networks (Baird & Hartter, 2017; Butt, 2015), studies have shown that pastoralist men use phones to communicate with various market players (Debsu et al., 2016; Djohy et al., 2017; Msuya & Annake, 2013). Through this market participation, men may come into contact with a greater diversity of people than women do, which may enable men to cultivate power in new ways.

7. Conclusion

The primary goal of this research was to understand how women access and use mobile phones within a complex of social relations in an agro-pastoralist, patriarchal context. In this thesis, I adapted the rural livelihoods (Conway & Chambers, 1991; Duncombe, 2014) and social relations (Kabeer, 1994) frameworks to identify: Maasai women's perceptions of barriers to and strategies adopted for phone access; Maasai women's perceptions of reasons for and issues from phone use; and how intra-household social relations influence the distribution of resources and practice of agency, and thus phone access and use. As Kirkman (1999) notes, mobile phones are just tools that provide information, knowledge, and communication opportunities. While phones may introduce novelty in the way men and women negotiate power, the transformation of existing gender inequalities is dependent on how men and women choose to leverage these tools. This study highlights how: (1) men are gatekeepers to phone access for Maasai women; (2) women are not a monolithic entity in phone use; and (3) phones aren't necessarily empowering women.

This study illustrates how men are inextricably linked in the negotiation and discussion of power. In patriarchal contexts, men, in a higher social position than women, are the gatekeepers to phone access. From men prohibiting phone use and choosing a favorite wife to providing essential resources and encouraging participation in the market, women are not independent of men. Discussions with women highlighted how the husband in particular shapes the experiences of his wives. Whether men are benevolent or strict gatekeepers, characteristics and extent of control as influenced by age, education, religion, ethnicity, and participation in the community influence if and how women access phones. While this study focused on households in patriarchal communities, processes of women's empowerment in all contexts necessitate a

dialogue between men and women at multiple scales, both in the household and in the greater community. Men's roles in gendered social relations are vital, and failure to account for this may exacerbate existing inequalities. This study highlights the importance of engaging both women and men in discussions of and interventions for women's empowerment.

This work also highlights variety in how women experience phones and empowerment. Women within the same household have different identities, and this undoubtedly influences the negotiation of power between husband and wife and between a wife and her co-wives. More can be done to understand intersectionality in this agro-pastoralist, patriarchal context. Specifically, future strategies to examine Maasai women's daily lived experiences with phones can account for intersectionality by analyzing how important attributes for Maasai women, such as son's status, education, income, and religion, influence phone access and use. Beyond phones, women's empowerment initiatives may benefit from an awareness of intersectionality by considering women's diverse identities.

Mobile phones do not necessarily empower women. The adoption of mobile phones may empower some women and disempower others, or even empower the same woman in some ways and disempower her in others. Multiple pathways exist between mobile phones and empowerment. In the context of this study, empowerment is not only a function of women's personal choice and characteristics, but often more importantly her position within the household, the household norms her husband controls, and her husband's characteristics. This study highlights how social norms in the household influence if and how a phone empowers women. While this study considers local social context, future work aimed at understanding how phones empower or disempower women may benefit by understanding local conceptions of empowerment, and understanding social norms regarding phone use beyond the household level. Development interventions aimed at using ICTs to empower women may also benefit by considering local social norms in order to mitigate unintended consequences of projects becoming embedded in existing social relations.

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Appendix A: Pictures of Respondents' Phones



Figure 4. Many respondents use multiple sim cards



Figure 5. While many of the respondents owned a phone, it was often dead or charging during the interview



Figure 6. Even though this phone is internet-capable, the owner didn't know how to access the internet or internet applications

Appendix B: Participatory Exercises

For five of the interviews, the female field assistants and I worked with women to create social network maps and a seasonal calendar. During these one to two-hour interviews, I would ask questions and we would work together to illustrate the women's responses on paper. Prior to each activity, we explained how we will use the drawing not only to help visualize the women's responses, but also to ensure that we understood what the respondents were sharing. Due to time constraints, field assistants translated and helped draw the activities. I would ask a question, the respondents and I would discuss the question, and then a field assistant would draw what the women described. After each question, the translator would describe how her drawing related to what the women explained. If the respondents had a question at any time or wanted to help with the illustration, we welcomed them to ask or pick up a marker. Below are some of question templates I used when conducting the exercises.

Social network mapping exercise

Description

Social network mapping is done with one participant at a time. This exercise maps out the respondent's social network to illustrate on paper the people the respondent interacts with or depends on. The stick figure (central node) drawing in the middle represents the participant. The five larger concentric circles represent geographical distance from the house where the respondent lives. For example, the smallest circle represents the household, followed by the sub-village, the village, the region, and then outside the region. The filled-in circles (nodes) represent people in respondent's life. The larger the filled-in circle, the more important that person is to the respondent (based on his or her own perceptions and interpretation of the question, "who is the most important person in your life?"). The lines connecting the two nodes represent a dyad and the forms of communication use between those two individuals. In this case, a straight line represents face-to-face communication and a dotted line represents communication through mobile phones.

Instructions

Provide the participant with a piece of paper and some markers (preferably multiple colors). Ask the participant to draw themselves in the middle of the paper, and then to draw five ever expanding circles around the stick figure. Ask questions about individuals in his or her life. Start with who the respondent considers the most important person in his or her life, and then work down the list of individuals they would consider in their social network until the respondent can't think of anyone else or chooses not to participate. Help guide the respondent to draw filled-in circles to represent each individual in the appropriate concentric circle that the individual lives in. Iteratively discuss the drawing with the participant, and ask questions about his or her relationships with the individuals drawn.

Guiding Questions

1. Who is the most important person in your life?
 - Who are you closest to?
 - Who do you trust the most?
 - Who do you depend on?
 - Who helps you the most?
 - Who do you love the most?
2. How would you describe your relationship with this person?
 - Do you support each other?
 - How do you support each other?
 - Why do you consider this person the most important in your life?
3. How do you communicate with this person?
 - Do you communicate face-to-face? By phone?
 - How often do you communicate with this person?

[Repeat the questions, but go on to the next important person until the respondent doesn't have anyone else to add]



Figure 7. The social network map of an *endingi* in a Loiborsoit household

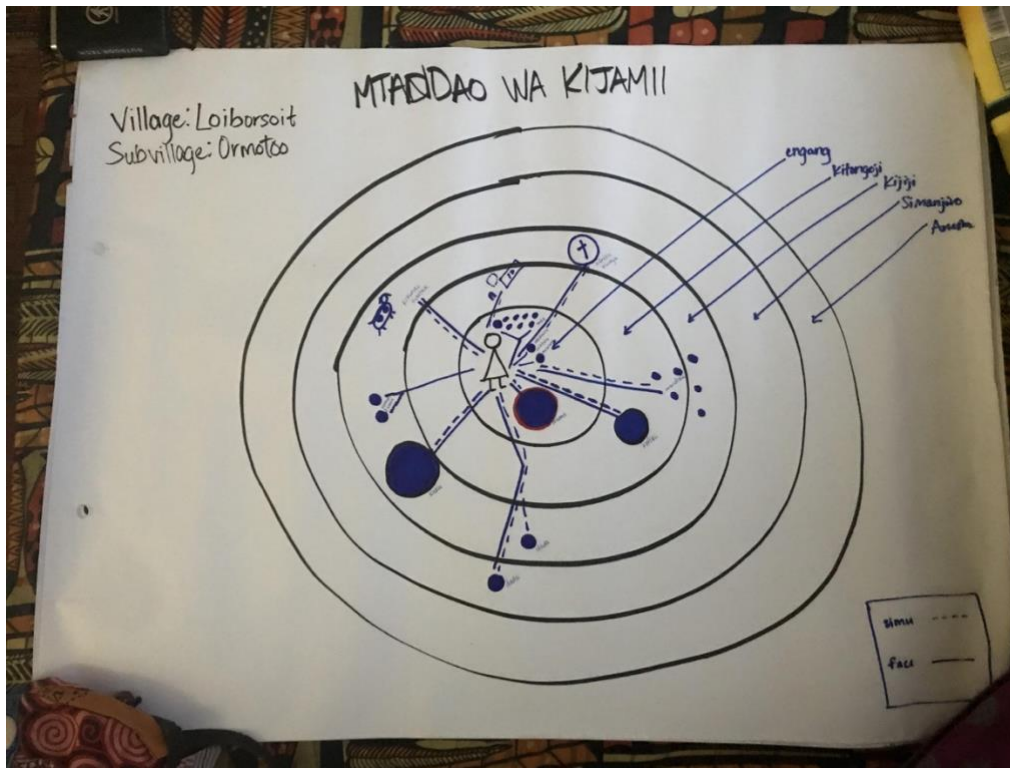


Figure 8. The social network map of another wife in the same Loiborsoit household

Seasonal calendar exercise

Description

Seasonal calendars can be done with one participant or with a group. This exercise is used to identify seasonal variations in labor activities, expenditure patterns, and income flow. This particular calendar focuses on income-generating activities that the respondents were involved in.

Instructions

Provide the participant(s) with a piece of paper and some markers (preferably multiple colors). Ask the participants when the beginning of the year is, and then what months or seasons they live by. Ask the participants or the translator to write these months or seasons at the top of the paper. Then identify seasonal or daily activities that the respondents partake in. Write these activities on the left-hand side of the paper. For each activity, fill in underneath the month or season that the respondents conduct that activity. Discuss what factors affect these tasks, such as weather, school, health, income, etc. Discuss what member of the household does each task. Be sure to discuss the calendar each time something is drawn. After discussing each activity, discuss general seasonal variations in labor activities, expenditures, and income by using the guiding questions. Identify when special occasions occur, when participants have the most free time, when they are the busiest, when sickness is most prevalent, when gifting is common, when requesting or paying back loans is most common, or whatever the participants deem important.

Guiding Questions

- When during the year is income flow the highest in the household? Why?
- When is expenditure the highest? Why?
- When are there deficits? Why?
- When is considered a good month of income for you? For your husband?
- What time of year do the most celebrations happen?
- What time of year is sickness or illness the most prevalent? What about health and well-being?
- What time of the year is it most common to request a loan? To pay back a loan?
- What time of year do you have the most free time? When are you the busiest?



Figure 9. Women's seasonal calendar showing flows in business activities and income

Appendix C: Group & Stakeholder Interview Template

District: _____ Village: _____ Subvillage: _____
Date: _____ # Attending: _____ Moderators: _____
Translators: _____ Notes: _____

1. What is the group composition? How are you related to each other? What are your age-sets? Which wife number are you?
2. Do you own mobile phones? If so, when and how did you get the phone? What type of phone do you own? Basic or internet-able? New or secondhand?
3. What do you use the phone for? How did you learn to use it? What applications do you use? Text, call, radio, etc? Which ones do you use the most? Do you use internet?
4. Who do you talk to with the mobile phone? Who do you talk to face-to-face? What do you talk about if you are talking with a phone? What type of information is exchanged?
5. What are some of the challenges of mobile phones?
6. What are some of the benefits of mobile phones?
7. How do you acquire the materials needed to use a phone, like voucher or electricity? Do you buy with their own money? If so, how do you make money?
8. How has the phone impacted your life? Do you feel the mobile phone has improved your life? If so, how? Has it changed the type of people you are able to communicate with? Compared to your mothers when they were the age you are now, what is your life like? Has it affected relationships?
9. Are you involved in any income generating activity, cooperative, or community group? If so, what activities/groups? Whose idea was it to join? Does your husband support your involvement?
10. What do you feel are the most important decisions you make as a woman? Do you normally make or contribute to decisions concerning marriage, livestock, healthcare, sending children to school, family planning, church, agriculture, or business?

Appendix D: Household Women's Survey 2018 – Phone Use Section

WOMEN'S SURVEY 2018

Household number

The woman must be a wife of the male household head also interviewed

Ensure that the interview is done in private

Do not skip any questions

Interview conducted by (Imekusanywa na): _____

Date (Tarehe): _____

Name of male household head (Jina la mkuu wa kaya): _____

Village (Kijiji): _____

Subvillage (Kitongoji): _____

Section B: PHONE USE (MATUMIZI YA SIMU)

B1. Do you own a phone (Je, unamiliki simu)? **YES (Ndiyo)** **NO (Hapana)**

B2. If NO to B1, have you ever owned a phone (Kama hapana, umewahi kumilikiwa na simu)?

YES (Ndiyo) **NO (Hapana)**

B3. If YES to B2, why do you no longer have it? (Kama ndiyo, kwanini huna? Zungushia moja.)

It broke (Ilivunja) **Husband took it away (Mume wangu alichukia)**

Stolen (Kuibiwa) **Sold it (Uliuza)** **Gave it (Ulitoa)**

Other (Nyingine)

B4. What year did you get the phone? (Je, ni mwaka gani ulipata simu?) _____

B5. What type of phone is it? (Je, simu ni aina gani? Zungushia moja.)

Basic (Button) **Internet capable (Uwezo wa intaneti)** **Smart phone**

B6. Who bought your phone for you (Nani alikununulia simu? Zungushia moja.)

Bought with own money (Kununuliwa kwa pesa yangu) **Husband (Mume)**

Child (Mwana) **Brother (Kaka)** **Other (Nyingine)** _____

B7. How much in phone vouchers have you added in the past 7 days (je, kiasi gani cha vocha ulivyoweka kwenye simu yako katika siku saba zilizopita)? _____ tsh

B8. Who typically pays for your voucher? (Kwa kawaida, nani anakulipia vocha za simu? Zungushia kwa kila kinachofaa.)

Bought with own money (Kununuliwa kwa pesa yangu) **Husband (Mume)**

Child (Mwana) **Brother (Kaka)** **Other (Nyingine)** _____

B9. Do you ever borrow Tsh from the phone company (Je, umewahi kukopa kwenye mtandao)?

YES (Ndiyo) **NO (Hapana)**

B10. If **YES** to B9, how many times have you borrowed in the past 4 weeks (Kama ndiyo, je ni mara ngapi umekopa ndani ya wiki nne)? _____

B11. How many SIM cards do you have (Una sim kadi/laini ngapi)? _____

B12. If more than one, which SIM card do you use the most (Kama una sim kadi zaidi ya moja, ni ipi unaitumia zaidi)?

Zungushia moja: **Voda** **Airtel** **Tigo** **Halotel**

B13. For each signal type, how is signal quality around your boma (within 1 min walk)? Mark one for each type. (Kwa kila aina ya mtandao, mtandao ukoje kwenye eneo la boma lako (ndani ya DK 1)? Angalia sanduku moja kwa kila aina.)

	Very Bad (Mbaya sana)	Bad (Mbaya)	Average (Kawaida)	Good (Mzuri)	Very Good (Mzuri sana)
Voda					
Airtel					
Other					

B14. How do you normally charge your phone? (Je, kwa kawaida unakuchargia simu? Zungushia moja.)

Duka (Umeme) **Duka (Solar)** **Bomani yangu (Solar)** **Bomani nyingine (Solar)**

Nyingine (andika): _____

B15. In the last 7 days, how many days was your phone out of use because it was charging (Katika siku 7 zilizopita, siku ngapi simu yako haikutumiwa kwa sababu ilikuwa na kuchaji)? _____ **days (Siku)**

B16. Does your husband ever check your phone (Je, mume wako amewahi kuchunguza simu yako)?

YES (Ndiyo) **NO (Hapana)**

B17. Has your phone ever been taken away from you by your husband (Je, mume wako amewahi kuchukua simu yako)?

No (Hapana) **Yes – once (Ndiyo, mara moja)**

Yes – more than once (Ndiyo, zaidi ya mara moja)

B18. Have you borrowed a phone to make a call/SMS in the last 7 days? (Umekopesha simu ili kupiga simu/ SMS katika siku 7 zilizopita?) **YES (Ndiyo)** **NO (Hapana)**

B19. If **YES** to B18, who did you borrow from? Circle one. (Kama ndiyo, aliyekupa nani? Zungushia moja.)

Your husband (Mume wako) **Brother (Kaka)** **Son/child (Mtoto)**

Another wife (Mke mwingine) **Friend (Marafiki nje ya boma)**

Other (Nyingine): _____