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Full Length Research Paper

Time spent by women and men in households on economic and care activities during productive hours in Morogoro District, Tanzania

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Using a cross sectional survey, this study investigated variations in time spent between men and women in economic productive and non-economic reproductive activities in a rural environment in Morogoro District in Tanzania. The study investigated 323 married or cohabiting women between the ages of 15 and 49 who lived in six villages across three wards. To determine the time expenditure disparity between men and women, females and their male counterparts were interviewed. A standardized questionnaire and focus group discussions (FGDs) were used to obtain quantitative and supplementary qualitative data, respectively. IBM SPSS V22 was used for data analysis. Content analysis was used to analyse the qualitative data. Women and men spent considerably different amounts of time engaged in productive and reproductive activities. Women spend 2.23 h less daily in economic production than males. Women spend 1.20 and 2.12 more hours daily on family care and child nursing, respectively. Aside from non-productive time, 64.8% of women devote 3 more hours to access maternal and child health services. Women spend more time in non-productive activities due to constrained access to social services and delivery at MCH clinics.

Key words: Time, production, reproduction, women, poverty, Tanzania.

INTRODUCTION

The differential division of labour among men and women is a global concern since it impacts the socio-economic status of men and women. Many studies have been conducted to describe gender differences in terms of time spent on productive and reproductive activities. An important rationale for most studies has been the existing philosophy that women take multiple responsibilities and spend more time in reproductive work compared to men, which compromise their economic productivity (Cawthorne, 2008). In addition, anti-poverty approaches concerned with women in development have shown existence of increased hours and intensity of work among women (Chant and Sweetman, 2012). Gender disparity in allocation of time in different activities is a characteristic

of both developing and developed countries. It is argued that 'unpaid' family care, which constitutes most of the reproductive responsibilities, is a global issue affecting women regardless of their education levels and income or the level of development of their countries. In Africa, Tanzania inclusive, gender time allocation in activities takes a similar trend whereby women spend more time in reproductive activities compared to men (Komatsu et al., 2015; Feinstein et al., 2013).

Despite the ambiguities that have existed in categorizing day to day activities, it is generally acceptable that productive or economic, market or paid activities reflect activities associated with payment (Kes and Swaminathan, 2006; Blackden and Wodon, 2006; Antonopoulos, 2008). On the other hand, reproductive, non-economic, or unpaid activities are those that are not associated with any direct payments. Reproductive work in its totality is a set of activities related to the creation and sustaining the family and the household. They include not only biological reproduction but also reproductive physical roles such as care and maintenance of the present and future work force (male partner, infants, school-going and non-working children and other dependent household members), and thus reproductive work reflects household chores in totality (Galtry, 2000; Bibler and Zuckerman, 2013).

Gender time distribution in different activities varies across different regions, cultures and socio-economic classes. It is reported that in Tanzania the burden of unpaid labour is large in households due to undeveloped domestic technology (Leavens et al., 2019). Consequently, women spend significant time for performing domestic tasks, and especially in transport that is related to domestic responsibilities (Leavens et al., 2019). Due to these many responsibilities, time burdens are widely identified as a major constraint on women's enterprise and income improvement. In general, a number of factors influence the amount of time that one spends in performing a particular activity. The factors include the age and gender composition of household members, seasonal and farm systems, ease of access to water and fuel, availability of infrastructure, and distance to key economic and social services such as schools, health canter's, financial institutions, and markets (Blackden and Wodon, 2006). Other factors affecting gender time distribution in activities are the level of knowledge about particular activity, access to assets that can simplify performing the tasks, availability of assistance in performing tasks and ability to outsource the activities (Komatsu et al., 2015).

African women must often work long hours performing domestic chores and collecting water and wood, apart from their paid or unpaid work in the fields or other labour market activities (Bardasi and Wodon, 2010). Literature shows that outsourcing activities is not an affordable or realistic option for most women hence their household's daily wellbeing depends on them to carry out these activities (Ferrant et al., 2014). Previous reports suggest that mothers with children less than five years of age would be working more hours in economic productions if suitable and affordable childcare facilities were available in the community (Kuhhirt and Ludwig, 2012).

Based on the literature above, it is evident that many studies have been conducted concerning gender division of labour and time expenditure in different activities, reporting disproportional expenditure of time between men and women (Cawthorne, 2008; Feinstein et al., 2013; Shirley and Wallace, 2004). Literature shows that the gender gap in allocating time in un-paid activities ranges from two hours to almost five hours per day but in general, around the world, women spend two to ten times more time on unpaid care work than men (Antonopoulos, 2008). This is evidenced by studies conducted in the Netherlands, France, United States, South Africa, Cambodia, India (Antonopoulos, 2008; Cawthorne, 2008; Ferrant et al., 2014; Kuhhirt and Ludwig, 2012; Komatsu et al., 2015).

Non-productive work counteracts women's productivity hence it is associated with poor SES in households. According to Pressman (2003), women and their households are more likely to be poor than men because they spend most of their time in care giving activities for their children and other household work hence low earning since they spend less time in economic productive work. Previous researchers have established that factors that lead to women's poor SES are not confined to women; they can affect other households (Ferreira and Ravallion, 2009; De Weerdt, 2010; Quisumbing et al., 2014; Chant and Sweetman, 2012). In addition, women are key players of productions especially in rural households. They play an important role in Tanzania's economy for being more active in agriculture, which accounts for 82% of the labour force (Quisumbing et al., 2014; Mganga et al., 2021) and they constitute majority (54%) of agricultural force (Leavens et al., 2019).

In Tanzania, majority of rural households are poor whereby 80% of rural population is in the three lowest wealth quintiles compared to 12% households of the urban (MoHCDGEC, 2016). With specific to the study area, based on head count ration, 55% of household in Morogoro rural are poor (Lusambo et al., 2016). Women who constitute majority of the work force especially in agriculture (54%) (Leavens et al., 2019) are time constrained. In addition to productive work, they are responsible for household work (MoHCDGEC, 2016). Responsibilities such as preparation of food, washing clothes, looking after children, educating children, forging food for family, child nursing and sitting with a baby and breast-feeding takes away the time that could be used for production since they are carried out during production hours. It is known that women spend much time in such activities. This is not only in other countries, but also in Tanzania (Leavens et al., 2019). However, most of the

studies have report about the length of time that women spend in reproductive work without specifying economic productive hours with specific society. In most of the studies, researchers have either used 24 h' time a day while others the time framework is not clearly stated (Komatsu et al., 2015; Leavens et al., 2019). Therefore, it is not clear to what extent women's economic productive time is lost through performing reproductive work in Morogoro district. In relation to this, it is not well documented concerning the factors determining the amount of time consumed in reproductive activities.

The factors influencing time spent in activities vary broadly depending on the level of development, social economic status and culture of the society. Hence, results and recommendations cannot be generalized across societies.

Therefore, this study intends to compared time spent by men and women for economic productive work, family care and maintenance as well as child nursing care (ii) determine the amount of time spent by women to attend clinic services while pregnant and for their under five children (iii) determine economic productive time lost during pregnancy and after delivery and (iv) identify the available types and extent of access to childcare assistance. While gender division of labour and time expenditure in particular activities and its economic implications in developed countries has been well studied (Cawthorne, 2008; Ferrant et al., 2014; Kuhhirt and Ludwig, 2012), scanty data exist to explain the extent of time lost by women through performing reproductive activities in developing countries particularly in Morogoro district, Tanzania. The factors determining the economic time lost in reproductive work are not clearly known in Morogoro district.

This study is significant because in Tanzania, women constitute majority of the labour force in agriculture (54%), which is the main source of livelihood for the Tanzanian population and provides more than two-thirds of employment and almost half of Tanzania's GDP (Leavens et al., 2019; Palacios-Lopez et al., 2017). Therefore, balancing time for productive and reproductive responsibility for women remains essential. Moreover, the government of Tanzania through its FYDP 2016/2017-2010/2021 considers women economic lost time as a barrier to achievement of economic transformation (MoHCDGEC, 2016). Time poverty has long been recognized as a constraint to development in Sub-Saharan Africa, with women working especially long hours due- in part to, a lack of access to basic infrastructure services such as water and electricity, but also because of their assigned role as the main providers of care and domestic (unpaid) work (Bardasi and Wodon, 2010).

Therefore, results from this study are useful to the government and other women development partners because it will provide insight about the amount of time that women spend in various activities and the pertaining

factors hence an appropriate entry for interventions. Consequently, the study will complement the national and global development efforts intending to improve participation of women in economic production for sustainable development (Sachs, 2012). The study is also important since it points out areas for interventions that aim at maximizing women's potential in economic productivity. This study was guided by the feminist explanations of the Feminization of Poverty theoretical arguments. The theories assert that low earnings among women are due to care-giving responsibilities for their children and their households. These household care responsibilities take away from women the time that could be spent for economic productions (Pressman, 2003).

METHODOLOGY

The study area and duration

This study was conducted in Morogoro District, a prototype rural community in Tanzania, from June 2019 to May 2021. The district was selected purposively due to its known prevalence of poverty, whereby 55% of the households are regarded as poor (Lusambo et al., 2016; MoHCDGEC, 2016). This is supported by the national data that 80% of the rural population are in the 3 lowest wealth quintiles (MoHCDGEC, 2016). Three wards in the study district, Gwata, Mkuyuni and Kinole were purposively selected. From the three wards, six villages were randomly selected to participate in the study. The six study villages were Kinonko and Maseyu from Gwata ward, Madamu and Kibwaya from Mkuyuni ward and Tandai and Ludewa from Kinole ward.

Study design

This study adopted a cross sectional design. The rational for choosing a cross sectional study design was its suitability and the nature of data to be collected (Bell et al., 2022).

Sample size estimation

The current study was designed to have a precision of 0.05 and confidence level of 0.95. The online 'EpiTools' epidemiological calculator $n = [Z^2 *P (1- P)/e^2]$, was used, where 'Z' is the value for standard normal distribution, corresponding to the desired confidence level (Z=1.96 for 95% CI). Poverty level in the study area was reported as 55% (Lusambo *et al.*, 2016), hence the studied parameter 'P' was estimated at 0.55 and 'e' is the desired precision (0.05).

Using this formula, a minimum of 380 participants were required to achieve the desired statistical power. However, based on the fact that completion of a questionnaire required men and women (couples); and it is relatively difficult to get men, a sample size was increased to take care of incomplete questionnaires that would be dropped out. Therefore, total of 627 women were interviewed. This also intended to increase the statistical power of estimating relationships between the study variables (Tanaka, 1987).

Study population, inclusion criteria and sampling procedure

This study included women aged between 18 and 49 years residing

in the study villages. The chosen age was specified as the reproductive age range by the Tanzania Demographic Health Survey (National Bureau of Statistics (NBS) [Tanzania] and ICF Macro, 2011; 2011). Reproductive age was important to allow obtaining information about both productive and reproductive issues. Male partners of participating women were interviewed to determine the time they spend in productive and reproductive work and child nursing care hence allow establishing potential productive time loss by women. This setup allowed not only capturing information concerning realistic reproductive roles played by women, but also observation of some practices such as child care during production time. Women included in the study were those with at least two children who could provide, among other things, information about childcare services and experience. A list of all eligible participants was established from registers of village residents and this list was used as the sampling frame for selecting participants.

Study variables and definitions of categories

In the current study, input variables were namely, the time spent (in hours) by men and women in productive and reproductive activities; the time spent by women for attending ANC and MCH clinics; productive time lost during pregnancy and after delivery as well as access to child assistance. The study community was the basis for identifying the roles and categorizing them. Estimation of time for productive and reproductive activities was considered as the potential time for economic production that is between 6.00 am and 6.00 pm as defined by the study community.

Economic productive work included activities which are the main economic activities in the study area, including agriculture, business/trading, mining, bee keeping, fishing, casual labour and animal husbandry. Reproductive or economic work was divided into three categories. Category one included household and family care and maintenance activities such as cooking for children and family, washing clothes and looking after the children. Category two included the time spent on child nursing such as baby-sitting and breast feeding. Category three included activities directly related to biological reproductive responsibilities such as attending ANC and MCH clinics.

It is important to note that the activities performed by women at different stages of their life cycle were identified by the community as follows: Women are responsible for productive activities that mostly include agriculture in totality, business/trading, casual labour, and animal husbandry as the case may be. In addition, women are responsible for reproductive work such as family care and maintenance (Food preparation, washing clothes, looking after children, educating children, fetching some water, cleaning house environment and collection firewood). While pregnant and with under five years children, in addition to the above activities, a woman has to attend Mother and Child Health (MCH), performs child nursing, sitting with a baby and breast-feeding.

Data collection tools and methods

Data collection involved the use of structured, close ended questionnaire through face to face interviews. The questionnaire used in this study was developed by the investigators; its validity and reliability were also determined. It was first piloted on ten respondents before the actual study and these respondents were excluded during actual data collection and analysis. Validity and reliability were determined by using computer software IBM SPSS Version 22. While the questionnaire was used for collecting quantitative data, a focus group discussion guide was used to guide

the collection of qualitative data through Focus Group Discussions (FGDs). While women responded to all the items, their counterpart men were interviewed specifically about the time that they spend in productive and reproductive work only. For both participating women and their counterpart men, time measurement was done as described by previous scholars (Komatsu et al., 2015); a record was taken for activities conducted consecutively in four days hence the average time was considered as usual time that a person spends for that particular activity.

Three groups each consisting of 6-8 women were involved in FGDs. The group size was based on recommendations of previous scholars that is, between 6-12 individuals per group (Azzarri et al., 2006; Ritchie et al., 2013). Field notes were taken during discussion and important quotes were recorded. Most of the selected group participants were those who had held leadership positions either during the time of study or in the past. The requirement for leadership experience among FGD participants was meant to involve women who had ample information about the study population. Some of the positions held by the participants of the FGDs included leadership in village government, women social and economic groups and school committees. The FGDs intended to complement information obtained from the study participants in the questionnaire-based quantitative information and to clarify some issues that needed more information.

Data analysis

Analysis of quantitative data

Quantitative data collected by questionnaires were analysed using Statistical Product and Service Solutions (IBM SPSS Armonk, NY, and USA) software version 22. Descriptive data of the categorical variables were presented in the form of numbers and percentages organized into Tables. Measures of central tendency (medians and means) were reported as tables and in text. Comparison of time spent by men and women in productive and reproductive activities was performed using students T-test. This test compares the mean values for the two groups to tell if they are different from each other. The students T-test also tells how significant the differences are; and if those differences could have happened by just chance. For each study issue, non-responses were excluded in the analysis.

Analysis of qualitative data

Content analysis was adopted whereby a systematic process for analysis was followed which involved reviewing the field notes and preparing summary for information from individual focus groups. This approach has also been used by others (Krueger et al., 2014). Themes allied to the guiding questions were identified and recorded indicating distinct opinions about the research issues. Few quotes were used to illustrate important points.

Ethical issues

Permissions from all relevant authorities were obtained to conduct this study. The study was approved by Sokoine University of Agriculture, and then introduced to local leaders at the district, wards and villages before involving study participants. Sensitization meetings were held to raise awareness of the study participants concerning the study. Participation was voluntary and participants were informed that refusal had no harm. The process of data collection allowed confidentiality whereby each respondent was interviewed at a time and in privacy.

Table 1. Demographic and household characteristics of study participants (n=323).

Characteristics	Frequency	Percent
Education level		
No formal education	140	43.3
Primary	172	53.3
Secondary or higher	11	3.4
Marital status		
Married	299	92.6
Cohabiting	24	7.4
Household size		
<4	7	2.2
4 - 6	228	70.6
>6	88	27.2
Median (IQR) number of HH members	6 (4 - 7)	
Age groups in households (years)		
<5	274	15.8
5 - 14	616	35.6
≥15	841	48.6
Average household density	5.4	

IQR=Interquartile range; HH = Household.
Source: Authors

Table 2. Time spent by men and women for economic and care activities (n=323).

Mean time spent on different activities[†]	n	Mean	SD	Mean diff.	95% CI	p-value
Economic productive work						
Women	323	6.31	2.16	-2.23	-1.51, 0.95	<0.001
Men	323	7.54	2.44			
Reproductive (family care and maintenance) work						
Women	251	3.02	1.77	1.20	0.93, 1.47	<0.001
Men	251	1.82	1.94			
Child nursing care						
Women	275	3.89	3.73	2.12	1.69, 2.55	<0.001
Men	275	1.78	1.63			

[†]Average time in hours spent in 12 hours of daytime for four consecutive days of a week.
Source: Authors

RESULTS AND DISCUSSION

Demographic characteristics of study participants

Demographic characteristics of study participants are presented in Table 1. Out of 323 women involved in the study, 53.3% had attained primary school education and about a half (43.3%) had not received any formal school education. About one fifth (15.8%) had children who were below five years old, and more than one third (35.6%) of the women had children of between 5-14 years of age.

Time spent by men and women in different activities

The time spent by men and women in economic productive activities, reproductive and child nursing care activities during 12 h of daytime were analysed for comparison purposes (Table 2). Results show that, on average, women spend 2.23 h less per day in economic production activities compared to men. On the other hand, the study found that women spend 2.8 more hours per day compared to men, in reproductive activities particularly family care and maintenance work as well as

Table 3. Amount of productive time lost during pregnancy and after delivery.

Variable	Time (months)	Frequency	Percent
Unable to work at all during first pregnancy (n=279)	<1	69	24.7
	1 - 2	154	55.2
	>2	56	20.1
Unable to work at all during last pregnancy (n=278)	<1	67	24.1
	1 - 2	152	54.7
	>2	59	21.2
Unable to work at all after delivery of last born (n=277)	<1	18	6.55
	1 - 2	100	36.1
	>2	159	57.4

Source: Authors

Table 4. The time spent to attend ANC and MCH services.

Variable	Response	Frequency	Percent
Time spent on MCH* clinics (hours) (n=321)	Mean (SD**, Range)	1.7 (0.5, 1 - 2)	
	<3	113	35.2
	≥3	208	64.8
Number of ANC*** visits when pregnant (n=320):	Mean (SD, Range)	5.4 (1.2, 2 - 8)	
	<4	16	5.0
	≥4	304	95.0
Maximum age of taking child to MCH clinic (years) (n=321)	Mean (SD, Range)	4.8 (0.8, 1 - 6)	
	<5	17	5.3
	≥5	304	94.7

*MCH= Maternal and Child Health service; **SD= Standard deviation ***ANC= Antenatal Clinic.
Source: Authors

child nursing care. In all cases, the mean time spent by men and women for the three types of activities (economic production, family care and maintenance as well as child nursing care) was statistically different (p<0.01).

FGDs results revealed that time spent in household work was lengthened by poor availability of social services in the area particularly lack of assistants for child-care and poor access to important services such as clean water.

Economic productive time lost by women during pregnancy and after delivery

Results in Table 3 show that based on the first and last pregnancy, only about one fifth (20.1 or 21.2%) of the study participants could not work at all for more than two months when pregnant. Nevertheless, after delivery, majority of the women (57.4%) were unable to work for more than two months.

Time spent to attend ANC and MCH services

Results presented in Table 4 show that majority of the women spend 3 hours or more for a single visit to the ANC during pregnancy and MCH clinics for up to five years after delivery. Factors that extend the time that women spend for attending clinics were the insufficient health workers at the clinic centers and inadequate commitment of care providers to attend to their clients (FGDs). When pregnant, women attend ANC and MCH clinics more than five times on average (5.4) and make about sixty visits (once every month) until the child is about five years old (4.8 years).

Common health problems experienced by women after delivery

Participating women were asked to explain their knowledge and experiences regarding their health status after delivery. Results show that after delivery, many
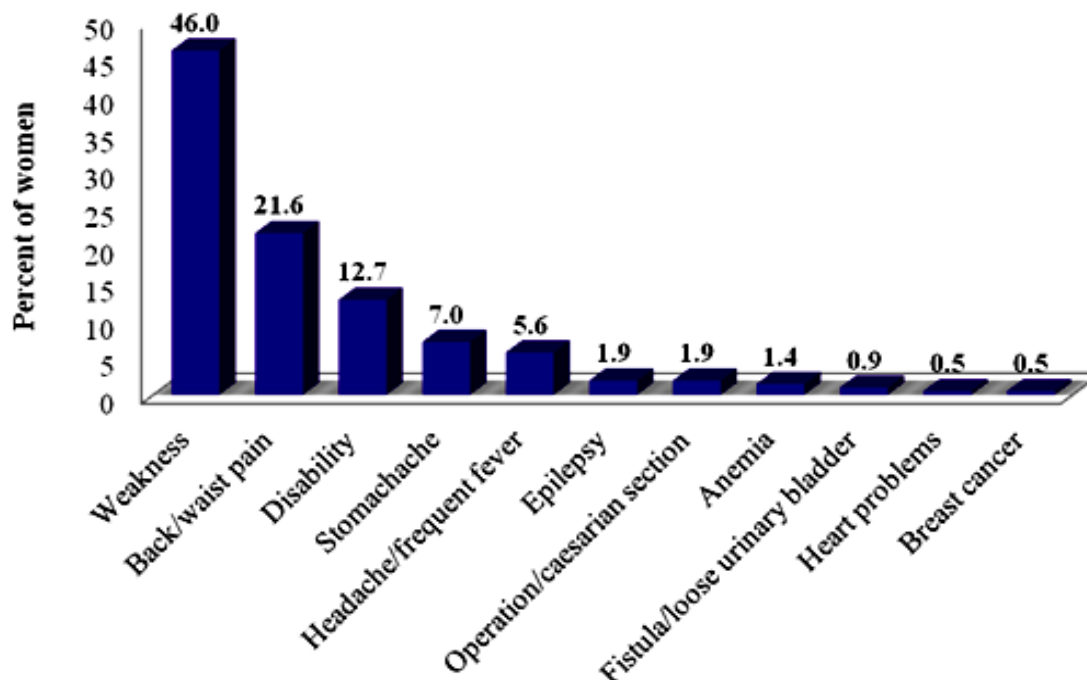
Figure 1. Health problems experienced by women after delivery.
Source: Authors

women encounter health problems that hinder their engagement in production. The main health problems experienced by women (and related percentages) are shown in Figure 1. Most of the women are affected by general body weakness (46%) and back/waist pain (21.6%). Other health problems affect less than 13% of the study participants.

Women's access to childcare assistance and services

Among the 323 respondents, 310 (96.0%) answered to the question on whether they were assisted to care for their children for the last two young children. Of these, only 11 (3.4%) acknowledged to have received reliable assistance for care of the last two children. Of the 11 respondents who received assistance, all of them reported to have received assistance from relatives. When asked if the assistance was timely, 8 (72.7%) agreed on the timeliness of the assistance. The major reason for not getting assistance was reported to be financial constraints to pay for the service; other reasons are shown in Figure 2. Respondents who got assistance were asked if a male or female extended the assistance. Out of the 11 respondents, 7 (63.7%) responded to the question. Of these 5 (71.4%) were assisted by a female with mean (SD, range) age of 35.6 (33.6, 5-80) years while 2 (28.6%) were assisted by a male with mean (SD, range) age of 11.5 (2.1, 10-13) years.

DISCUSSION

The purpose of this study is to explore differential gender expenditure of time in productive and reproductive activities in a rural setting in Morogoro District in Tanzania. Results show that four out of ten interviewed women did not attain primary school education. The findings were within the recorded data by the Tanzania. Based on the National Bureau of Statistics (NBS) (Tanzania) and ICF Macro, 2011) (National Bureau of Statistics (NBS) [Tanzania] and ICF Macro, 2011, 2011), it is acknowledged that the level of education differs significantly across Tanzanian regions. Finding from this study shows a considerable illiteracy rate among women in the study area. Gender discrimination, in which females were not provided with the basic opportunity and support to achieve primary school education as boys were, was the main explanation for the observed high illiteracy rate as revealed in focus groups. Previous research suggests that education is crucial in exposing people to a wide range of experiences, opinions, creativity, and inventive thinking when it comes to organizing daily activities (Thiessen and Nickerson, 1999; Bynner and Parsons, 2002). According to this theory, the study area's claimed illiteracy is likely to have a detrimental impact on the research community's time management.

Contrarily to the hypothesis in this study that time spent by men and women in productive and reproductive activities in rural areas is not significantly different, this
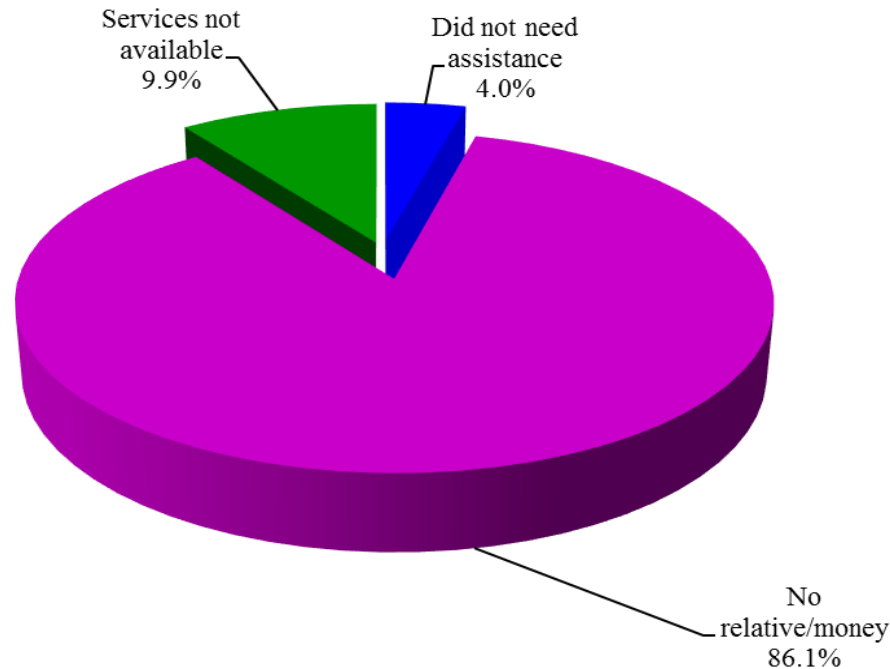
Figure 2. Major constraints for not getting child care assistance.
Source: Authors

study found statistically difference in the time expenditure between men and women in economic productive, family care and child nursing activities. Although the interview showed both men and women to perform all three types of activities, it was clearly evident that women spent more time in family and child nursing care activities (p-value < 0.01) in both cases. Men spent more time in economic productive activities (p-value < 0.01). This observation was not surprising since in many African and Asian communities, family maintenance and child care activities are regarded as, by large, a female responsibility (Blair and Lichter, 1991; Hundley, 2000). Similar findings were previously reported in Bangladesh, Cambodia, Ghana, Mozabique and Nepal (Komatsu et al., 2015). Literature shows the involvement of women in reproductive activities especially domestic at young age, with consequences that impede women's overall processes of development. For example, it has been reported that women leave studies to undertake domestic labour, while men do so to enter paid labour (Godoy, 2004).

Findings from FGDs showed that the amount of time spent by women in performing household activities was lengthened by a number of factors most of which are related to poor social services. Scarcity of nearby sources of water for domestic use, absence of electricity, lack of reliable assistance for child care, lack of technologically improved cooking stoves and scarcity of cheap alternative sources of domestic power (firewood) were among the factors that contributed to intensive time expenditure on family care activities among women. Findings from this study are in line with previous findings

by other scholars that gender time distribution in activities is affected by factors that include the status of access to social services such as availability of water, fuel and to improved domestic technology (Harvey and Taylor, 2000; Bittman et al., 2004; Johnston et al., 2015; Blackden and Wodon, 2006).

Findings from this study show that women spent more time in family and child care but not in economic production partly because childcare assistance services were un-available in the study area. Majority of women were undertaking productive work in parallel with child care. During FGDs, a woman from Maseyu village pointed out that...*"Women usually take care their children while working…"*. This finding has also been reported in other parts of the world (Belanger and Stone, 2008). Our study has shown that the large majority of participants either could not afford hiring a maid or having a relative to assist with childcare. The ideology that childcare is a woman's responsibility is deeply rooted in the study area perhaps because majority of rural women do not have formal employment. They are mainly engaged in agricultural activities making it easy to manipulate their time to accommodate both childcare and economic productive activities simultaneously. However, the consequences of this are affecting both the mother's work efficiency and the child's health and education. An important challenge remains to enable women spend more time in productive activities in rural Tanzanian where more than a half (54%) of the labour force relies on women.

Attending antenatal care (ANC) and maternal and child

health (MCH) clinics was found to be among the factors that contribute to loss of productive time among women. During pregnancy, women reported to lose time for economic productivity by attending ANC. The findings show that productive time among women is lost again after delivery due to MCH attendance, childcare, and a range of maternal post-delivery health problems. This study found that, almost all women (> 95%) had to make more than 4 ANC visits and about 60 (57.7 visits on average) to MCH clinics until the child is about 5 years old (4.8 years), which is in line with the recommended time to attend ANCs between 4 and 10 visits and up to 60 MCH visits until the child is 5 years old (Simkhada et al., 2008). In the present study, majority of the women (64.8%) spend three (3) or more hours for each ANC/MCH visit. The implication for this is that, for any single pregnancy and child care to the age of 5 years, a woman spends a significant amount of time to obtain ANC and MCH services. This time is deducted from productive work since such services are offered during work hours.

Although the ANC and MCH services are unarguably indispensable, the concern remains whether there are factors which unnecessarily extend the time spent in acquiring these services. In the FGDs, participants were in the opinion that the small number of care providers in ANC and MCH clinics and poor commitment of the health service providers at the MCH facilities contribute to unnecessary increase in the time that women spend at ANC and MCH centers. "*We stay long at the MCH clinic because most of the time service providers at the clinic are busy with personal issues…*" reported the woman from Kibwaya during FGDs. In addition, post-delivery health issues including body weakness and back/waist pain were also among the contributors to productive time loss among women.

After delivery, more than a half of the participants (52.2-54.7%) stayed for about 1-2 months without working at all during their first and last pregnancy, respectively. Moreover, almost similar proportion (57.4%) could not work all after delivery due to, among other things, poor health problems that include body weakness, back/waist pain, abdominal pains, headache and frequent fever. Moreover, majority of the women are not assisted in taking care of their children due to lack of money and unavailability of the service. This is not strange since it is common for a woman's ability to function physically to decrease during pregnancy. Literature shows that physical function can decline from a mean score of 95.2 prior to pregnancy to 58.1 during the third trimester (Haas, 2005). The prevalence of depressive symptoms rose from 11.7% prior to pregnancy to 25.2% during the third trimester, and then declined to 14.2% during the postpartum period. It can therefore be noted that the process of childbirth consists of non-productive periods of time for a woman. The main concern in this study is the productive time lost thus reduces unnecessary loss of time that can be spent for production.

Conclusion

The study reveals that during economic productive hours, women and men spend considerably different amounts of time in productive and care activities; women spend less time in economic output and more time in care activities.

Because insufficient social services lengthened the time spent by women in care activities, the study advises the government and non-governmental development organizations to undertake interventions aimed at reducing the time spent by women in care activities. Improved access to social services such as clean water, energy, and affordable technology, particularly for cooking, can help achieve this. Cooking technology advancements could include the development of more efficient stoves that save time and lower the amount of firewood required per meal.

In addition, the study found that mothers devote a significant amount of time to obtain ANC and MCH services for themselves when they are pregnant and their children under the age of five. Given the importance of such services, the Ministry of Health is advised to develop interventions aimed at shortening the time it takes to obtain them. This can be accomplished by ensuring that rural women have simple access to MCH clinics and that clinic employees perform well, reducing the time it takes to acquire care. Furthermore, the study found that child care providers were sparse in the study area, leading to the overlapping of child care productive activities.

Recommendations

It is recommended that women should be economically empowered so that they or their households can afford to hire assistants when they are needed.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Governance principles for local level groundwater management in Njombe District, Tanzania

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Groundwater governance is a necessary condition for groundwater management that in turn improves access to clean and safe drinking water. However, it is one of the developmental issues, which has not been addressed squarely in Tanzania. Using governance principles, we explored groundwater governance in Njombe district where water for domestic use depends on groundwater source. The study used cross-sectional research design by adopting a mixed method approach with a random sample of 250 respondents. It also involved 32 Focus Group Discussion (FGDs) participants and 9 governance actors at a district and community levels. The Statistical Package for Social Sciences (SPSS) was used to summarize descriptive statistics while qualitative data were subjected to the content analysis. The results show that five out of eight governance principles namely: accountability, transparency, collaboration, rule of law and responsiveness were not practised effectively because of poor knowledge among the governance actors. To that effect, the practice of governance principles was poor translating into poor groundwater management. Therefore, district authorities should build capacity on good governance to all groundwater governance actors recognized by the law. This helps practise governance principles effectively for groundwater management.

Key words: Groundwater governance, actors, Njombe District, Tanzania.

INTRODUCTION

The information at a global level show that access to basic drinking water services is increasing since the 2000 (UNICEF and WHO, 2019). For example, the global population with access to at least basic drinking water services increased from 82% out of five billion people in 2000 to 90% out of 6.8 billion people in 2017 (UNICEF and WHO, 2019). Even though, there are inequalities between developed and developing countries, and also between rural and urban areas. Urban areas are better off in terms of accessing clean and safe drinking water from improved sources compared to rural areas (UNICEF and WHO, 2019). This implies that the world has a long way to go in terms of realizing fully the ambitious goal of Sustainable Development on achieving 'universal access for all and leaving no one behind by 2030'. Efforts to improve access to clean and safe drinking water in
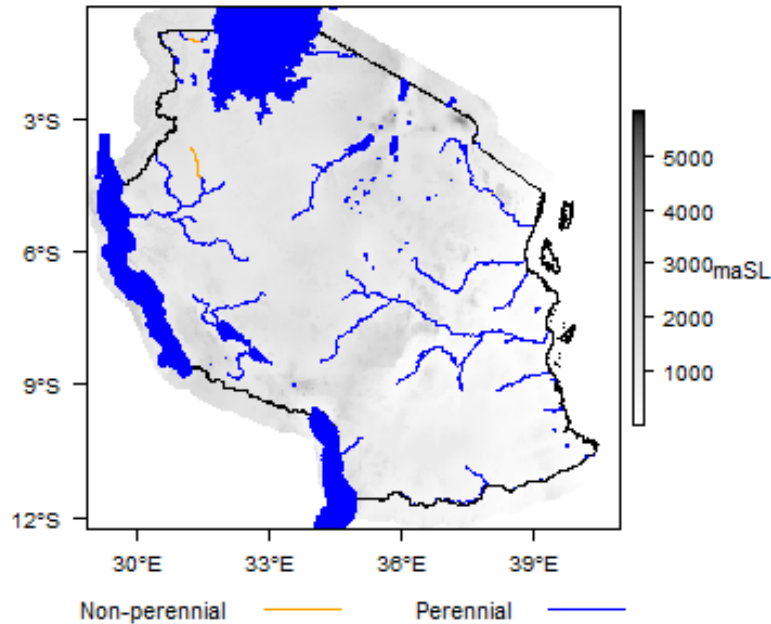
Figure 1. A map showing Lakes and Rivers in Tanzania (Sangea et al., 2018).
Source: Authors

Tanzania date back to the 1970s when the country implemented the socialism and self-reliance policy. During that particular period, the Government of Tanzania aimed to ensure that by 1990s all households could have access to safe drinking water within 400 meters (Sangea et al., 2018). As a country, Tanzania is endowed with abundant natural water sources mainly rivers and lakes (Figure 1). While most of rural areas in Tanzania depend on groundwater from communal boreholes for drinking water supply, urban areas depend on piped water supplies from groundwater sources. This implies that groundwater is critical for the living in Tanzania; and therefore needs governance to ensure sustainable supply and management. With that Tanzania has developed water governance mechanisms (Seward, 2015; URT, 2002; Murad, 2014).

In Tanzania, available information shows that by 2015, about 46% of the rural population had access to safe drinking water compared to 77.2% of the urban population (Sangea et al., 2018; Mgoba and Kabote, 2020). According to URT (2002) utilization and governance of water in Tanzania is regulated by statutory and customary laws. Maganga (2004) provides detailed information about customary norms and statutory laws for implementing Integrated Water Resource Management (IWRM) in the country since colonialism. The National Water Policy (NAWAPO) of 2002 emphasizes decentralized water governance in the country. This aims to ensure effective communities' participation in the water sector (URT, 2002; 2009; Zaag and Savenije, 2014; FAO, 2016). The NAWAPO and Water Supply and Sanitation

Act No. 12 of 2009 consider Community Owned Water Supply Organizations (COWSOs) as the legal water governance actor at a local level in Tanzania. Other crucial water governance actors include village governments and Water Users Associations (WUAs) (Kabote and John, 2018).

The Community Owned Water Supply Organizations (COWSOs) are becoming pivotal for water governance in Tanzania in addition to other actors. Their function is basically governance in terms of enforcing water charge payments, enforcing penalties upon breach or failure to comply with water rules, encouraging sense of communities' ownership of water points, and encouraging community participation in planning and implementation of groundwater management (URT, 2009). Therefore, COWSOs have legitimacy to influencing groundwater users' behaviour and therefore critical for groundwater governance. To that effect, COWSOs and other governance actors should make sure that they practically implement governance principles for groundwater governance.

Tanzania uses a total of 1 265 000 m³/day of groundwater; 50% supplied in rural areas (Sangea et al., 2018). However, groundwater shows high chloride concentration in Lindi, Mtwara, Singida, and Shinyanga regions (Sangea et al., 2018). The same source shows high concentration of carbon dioxide in Lindi and Mtwara. In addition, there is high fluoride concentration in Kilimanjaro, Arusha, Singida and parts of Shinyanga regions; high iron concentration in Mtwara and Kagera regions and high nitrate levels in Dodoma and Singida.
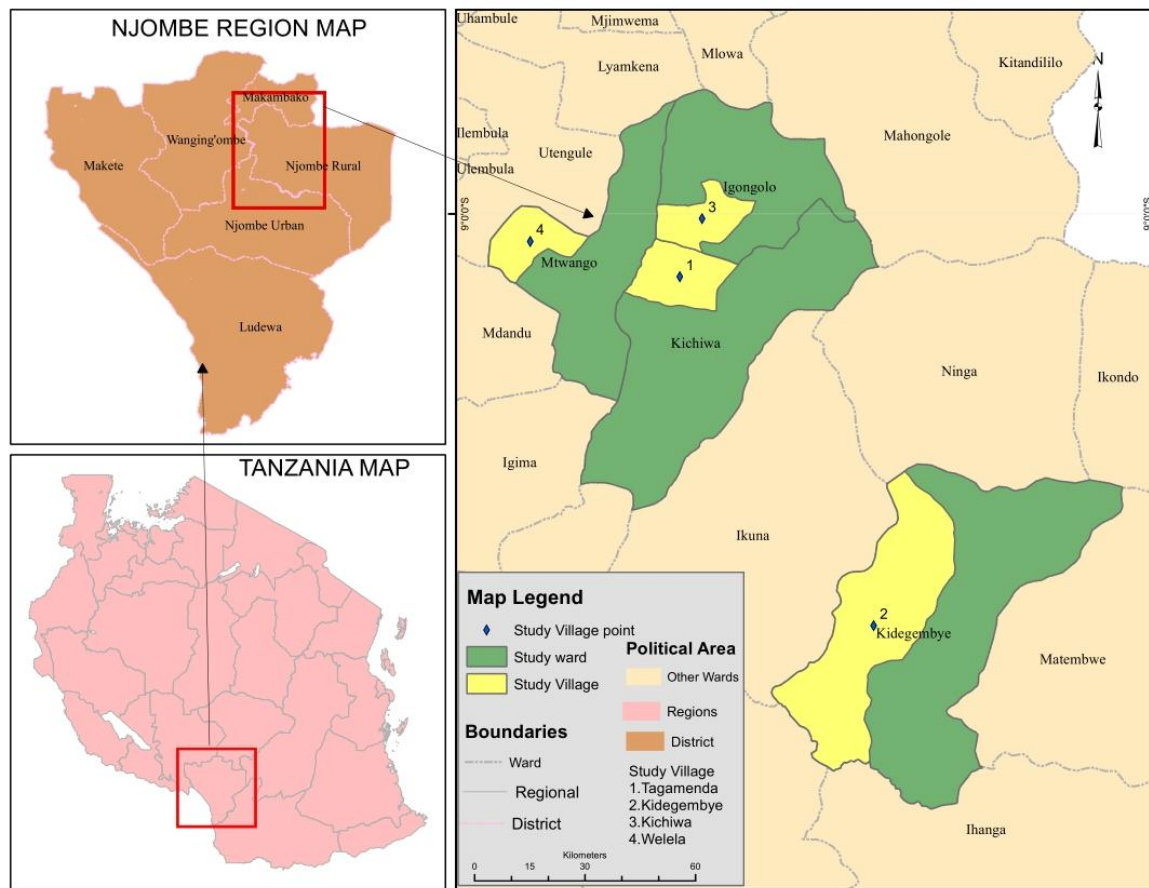
Figure 2. Location map of Njombe district showing the study sites.
Source: Authors

This implies that Tanzania has a long way to go in terms of controlling and removing groundwater pollutants for safe public consumption. Groundwater pollution is a governance and or management issue. There is no conclusive definition of groundwater governance in the literature. While some authors like Megdal et al. (2015) defined the concept as a comprehensive framework encompassing laws, regulations and customs for groundwater use as well as engagement of the public sector and civil society in governing the resource. Others including Foster et al. (2009) consider the concept as a collective action to enhance sustainable and efficient utilization of groundwater for the benefit of the people and ecosystems in general. An effective groundwater management requires a groundwater governance system; indicating that groundwater governance and groundwater management are inseparable. In Njombe district, groundwater experiences challenges like unsustainability of the water points (Holtslag and Mgina, 2016); pollution and illegal groundwater exploitation (Arduino et al., 2012; URT, 2016). This suggests that governance is not effective to manage the resource in the district. Therefore, this study explores practise of

governance principles among groundwater governance actors particularly COWSOs, village governments and water users.

THE STUDY AREA

The study was conducted in Njombe District, Njombe Region, Tanzania (Figure 2). Data for this study were collected between September and November, 2019. The District is divided into three district councils namely: Njombe Rural District Council, Njombe Urban Council and Makambako Town Council. The District receives an annual average rainfall of 1 500mm (Madzengo, 2014), and it is characterised by a typical unimodal climate, that receives rainfall between November and April. The maximum monthly temperature is below 23.5 °C almost all months, excluding November and December in which the average temperature is 24.7°C. The minimum temperature ranges between 12 and 15°C from November to April, and is lower than 8 °C during June and July (Mtongori et al., 2015). The water sources in the District include river Ruhuji and natural springs (URT,

Table 1. Definitions of governance principles.

Variable	Operational definition	Sources
Participation	Opportunity for decision making, resource ownership, planning and budgeting	UNDP (1997), Burns et al. (2004), and Lockwood et al. (2010)
Accountability	Being responsible and answerable for groundwater matters	Lockwood et al. (2010) and Zaag and Savenije (2014).
Efficiency	Refers to the availability, accessibility and protection of groundwater resource	Abrha (2016)
Transparency	Availability and accessibility of information related to groundwater	Sanz et al. (2016) and Lockwood et al. (2010)
Equitability	Provision of an equal opportunity to the communities regardless of socio-demographic and economic differences	UNDP (1997) and Lockwood et al. (2010)
Collaboration	Working actively together among different actors	Graham et al. (2003)
Responsiveness	Reacting actively and timely on groundwater management matters	Abrha (2016)
Rule of law	Applying clearly and uniformly water rules to all groundwater users	Zaag and Savenije (2014) and Abrha (2016)

Source: Authors

2016). A number of water projects have been established for water supply in the district, and by 2016, the Njombe district had 65 water projects, 35 of them dealt with groundwater (URT, 2016). This implies that groundwater sources account for 53.8% of all water projects and therefore the district was a proper case to explore groundwater governance principles (Table 1).

METHODOLOGY

Research design, sampling procedures and sample size

The study adopted cross-sectional research design with a mixed method approach combining quantitative and qualitative techniques. The aim of the mixed method approach was to triangulate data collection methods as argued by Creswell (2014). Cross-sectional research design was adopted to explore information about governance principles. Purposive sampling was used to select Makambako and Lupembe divisions and four wards of Mtwango, Kichiwa, Igongolo and Kidegembye. The criterion for selecting divisions and wards was availability of groundwater points. The information about availability of groundwater points was obtained from Rural Water Supply and Sanitation Agency (RUWASA). Purposive sampling technique is recommended in social sciences because it focuses directly to an appropriate area for a study (Kothari, 2006). One village from each ward, making four villages, was selected using simple random sampling. The sampling frame comprised of 670 households of the study villages. From the sampling frame, a total of 250 head of households and spouses

were selected using simple random sampling. The total sample size was determined by using the Yamane (1967) formula. One of the assumptions of the Yamane formula is that the population size should be finite. The Yamane (1967) formula is expressed as:

$$n = \frac{N}{1+N(e)2}$$

(1)

Where: n = Sample size; N = Population size, and e = Level of precision, which is 0.05.

Substituting the total number of households and the level of precision into equation 1, we get the total sample size equals to 250. In order to ensure that the number of sampled households in a particular village was proportional to the total number of households, a proportionate sampling was deployed by using equation 2, and the sample size per village is shown in Table 2. By substituting the values into equation 2, we get sub-samples as shown in Table 2.

$$a = \frac{n}{N*b}$$

(2)

Where: a = Sample size for each village; n = Total number of sampled households for 4 villages, N = Target households for 4 villages, and b = Target households in each village (Yamane, 1967).

Data collection methods and tools

Quantitative data were collected using household survey guided by

Table 2. Number of sampled households.

Village	Groundwater points	Number of households (N)	Sampled households (n)	Percentage of sample
Welela	6	210	78	31
Tagamenda	4	186	69	28
Kidegembye	6	154	58	23
Kichiwa	5	120	45	18
Total	**22**	**670**	**250**	**100**

Source: Authors

a structured questionnaire. The copies of questionnaire were administered to the household heads and or spouses who responded to the questions. This tool generated data related to, among others, the respondents' socio-economic and demographic characteristics and governance principles. Qualitative data were collected through Focus Group Discussions (FGDs) and key informant interviews. One FGD was conducted in each village making a total of four FGDs. Each FGD comprised 7 to 9 groundwater users making a total of 32 participants. The proportion of women participants ranged from 4 to 6 per group. Qualitative data are useful in explaining quantitative data (Creswell, 2014). A total of 9 key informants, mainly leaders, from COWSOs, Village Government Authorities (VGAs) and RUWASA were involved. Both FGDs and key informant interviews were guided by a checklist of items.

Data analysis

Qualitative data were analysed using content analysis. This involved transcription of information. For quantitative data, the variables of governance principles were assigned points based on a five-point scale, that is strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points) and strongly disagree (1 point). During data analysis, the five-point scale was collapsed into a three-point scale, which is agree, neutral and disagree in order to ease interpretation. Then, the total number of respondents for each statement was counted to get the percentage distribution for agree, neutral and disagree. According to Pallant (2007), a three-point scale is appropriate for measuring social attributes such as attitude, awareness, perceptions, and knowledge. The One Way Analysis of Variance (ANOVA) was used to compare mean distance in meters from households to the groundwater points. The following formula as used by Ostertagova and Ostertag (2013) was adopted to calculate the mean distance.

$$\bar{x}_i = \frac{1}{n_i} \frac{\sum_{j=1}^{n_i} x_{ij}}{n_i}$$

(3)

Where: $\bar{x}_i$ = Mean distance of the ith group (village); n_i = Number of observations in the ith group (village); x_{ij} = Value of ith observation at the ith factor level (village)

ANOVA is a useful statistical technique that compares the mean difference for more than two groups (Pallant, 2007). In this study, villages are considered as independent groups. SPSS version 20 was used to generate descriptive statistics of respondents' socio-economic and demographic characteristics. SPSS was also used to compute percentage distribution.

RESULTS AND DISCUSSION

Respondents' socio-economic and demographic characteristics

The results show that exactly 50% of the respondents were females. In relation to age groups, 56.4% were between 40-59 years old. This indicates that the study area had active labour force. The results also show that 94% of the respondents depended on farming that was also a main source of income. Others depended on small scale businesses like tailoring, bricks making, and crop selling (Table 3). This implies that livelihood of the majority depended on farming. Welela, Kichiwa and Tagamenda villages mainly produced food crops whereas Kidegembye produced cash crops like tea and trees for timber production. According to URT (2018), agriculture provides employment to 66.3% of the Tanzanians. In addition, majority (68%) of the respondents had primary education whereas 20.4% had secondary level of education (Table 3). The results in Table 4 show that the mean age of the respondents was 43 years. This implies that majority of the respondents were adults. The mean number of persons per household was 5.6 higher than 4.9 persons reported at the national level in Tanzania (United Nations World Food Programme and World Bank, 2013) as well as 4.2 persons reported in Njombe District (URT, 2016).

Groundwater governance principles

The results on groundwater governance principles are presented in Table 5. About participation, 73% of the respondents participated to formulate by-laws in their localities. In some cases, the communities were represented by COWSOs in making by-laws, which is a legal actor for water governance in Tanzania. In addition, respondents showed a sense of ownership of groundwater points. With regard to accountability, the results show that five out of six statements of the accountability principle were poorly practiced (Table 5). This is because COWSOs did not work openly in terms of sharing success, challenges and progress on financial accounting with the communities of groundwater users.

Table 3. Respondents' socio-economic and demographic characteristics (n=250).

Variable	Welela	Kichiwa	Tagamenda	Kidegembye	Total
Sex					
Male	39(50.0)	23(50.0)	34(50.0)	29(50.0)	125(50.0)
Female	39(50.0)	23(50.0)	34(50.0)	29(50.0)	125(50.0)
Respondents age					
18-39	30(12.0)	17(6.8)	21(8.4)	24(9.6)	92(36.8)
40-59	41(16.4)	29(11.6)	43(17.2)	28(11.2)	141(56.4)
60 above	7 (2.8)	0(0.0)	4(1.6)	6(2.4)	17(6.8)
Relationship to the household head					
Head of household	38(15.2)	27(10.8)	43(17.2)	35(14.0)	143(57.2)
Spouse	32(12.8)	15(6.0)	22(8.8)	20(8.0)	89(35.6)
Daughter	2(0.8)	0(0.0)	0(0.0)	0(0.0)	2(0.8)
Son	6(7.7)	4(8.7)	3(4.4)	3(5.2)	16(6.4)
Respondents' marital status					
Married	57(22.8)	30(12.0)	45(18.0)	40(16.0)	172(68.8)
Single	4(1.6)	2(0.8)	1(0.4)	1(0.4)	8(3.2)
Divorced	2(0.8)	0(0.0)	0(0.0)	1(0.4)	3(1.2)
Widowed/widower	15(6.0)	14(5.6)	22(8.8)	16(6.4)	67(26.8)
Main source of income of the household					
Farming	65(26.0)	38(15.2)	56(22.4)	48(19.2)	207(82.8)
Business	11 (4.4)	8(3.2)	12(4.8)	10(4.0)	41(16.4)
Salary	1(0.4)	0(0.0)	0(0.0)	0(0.0)	1 (0.4)
Casual labour	1(0.4)	0(0.0)	0(0.0)	0(0.0)	1 (0.4)
Education level					
No formal education	3(1.2)	0(0.0)	3 (1.2)	2(0.8)	8(3.2)
Primary education	42(16.8)	33(13.2)	58(23.2)	37(14.8)	170(68.0)
Secondary school	21(8.4)	9(3.6)	5(2.0)	16(6.4)	51(20.4)
Tertiary education	12(4.8)	4(1.6)	2(0.8)	3(1.2)	21(8.4)
Respondents' main occupations					
Farming	70(28.0)	44(17.6)	65(26.0)	56(22.4)	235(94.0)
Small scale business	8(3.2)	2(0.8)	3(1.2)	2(0.8)	14(5.6)
Formal employment	0(0.0)	0(0.0)	0(0.0)	1(0.4)	1(0.4)

Number in brackets are percentage.
Source: Authors

Table 4. Descriptive statistics.

Variable	Minimum	Maximum	Mean	Std. Deviation
Age of respondent	23	78	43.0	11.8
Years of schooling of the respondent	0	13	8.1	2.5
Total number of the people in the household	3	9	5.6	1.3
Total number of years residing in the village	12	60	41.0	10.8
Annual income of the household from the main source of income	225 000	13 700 000	3 468 982	3 181 766.7

Source: Authors

The results on participation were contrary to Comte et al. (2016) and Masifia and Sena (2017) who argue that there is poor community participation in decision making in water projects in Tanzania. The contradiction between

Table 5. Respondents' responses of governance principles (n=250).

Governance principles	Statements	Disagree	Neutral	Agree
Participation	Owning properties for groundwater management	50(20.0)	30(12.0)	170(68.0)
	Budgeting resources for groundwater management	140(56.0)	96(38.4)	14(5.6)
	Allocating groundwater source points	17(6.8)	50(20.0)	164(65.6)
	Contributing resources for groundwater management	49(19.6)	105(42.0)	96(38.4)
	Formulating by-laws for groundwater management	66(26.4)	20(8.0)	183(73.2)
Accountability	Giving accounting reports	160(64.0)	40(16.0)	50(20.0)
	Accepting challenges related to groundwater management	55(22.0)	154(61.6)	41(16.4)
	Accepting challenges from groundwater users	183(73.2)	20(8.0)	47(18.8)
	Sharing lessons learned on groundwater management	194(77.6)	31(12.4)	25(10.0)
	Explaining openly the rationale for various decisions made	59(23.6)	154(61.6)	37(14.8)
	Discussing the accounting reports	215(86.0)tHIS	3(1.2)	32(12.8)
Transparency	Presenting the agenda of groundwater management in meetings	130(52.0)	50(20.0)	70(28.0)
	Providing financial statements	177(70.8)	20(8.0)	53(21.2)
	Allowing criticism from groundwater users	213(85.2)	21(8.4)	16(6.4)
	Giving or accepting apologies when matters have gone wrong	210(84.0)	18(7.2)	22(8.8)
	Sharing information from various governance structures	207(82.8)	18(7.2)	25(10.0)
	Knowing all source of funds if any	217(86.8)	8(3.2)	25(10.0)
Equitability	Treating all groundwater users with respect and dignity	76(30.4)	13(5.2)	161(64.4)
	Both men and women have opportunity of being leaders	87(30.8)	26(10.4)	137(58.8)
	Encouraging groundwater users to contribute resources	204(81.6)	16(6.4)	30(12.0)
	Witnessing fair source points allocation	88(35.2)	22(8.8)	140(56.0)
	Involving all people on groundwater management regardless their income differences	54(21.6)	13(5.2)	183(73.2)
	Involving all people on groundwater management regardless their age differences	100(40.0)	40(16.0)	110(44.0)
Efficiency	Groundwater points are well protected against pollution	101(40.4)	15 (6.0)	134(53.6)
	Mutual respect among groundwater users to access water	88(35.2)	5 (2.0)	157(62.8)
	Groundwater points is nearly allocated at the household	91(36.4)	50(20.0)	109(43.6)
	Availability of groundwater	76(30.4)	19(7.6)	155(62.0)
Rule of law	Paying the amount of contributions as agreed	130(52.0)	60(24.0)	60(24.0)
	Prohibiting all socio activities around groundwater points	60(24.0)	66(26.4)	124(49.6)
	Giving sanctions to all people who breached water rules regardless their social or economic status	72(28.8)	128(51.2)	50(20.0)
	Groundwater management focus on issues not on a person	105(42.0)	100(40.0)	45(18.0)

Table 5. Contd.

Responsiveness	Timely disseminating the information	191(76.4)	37(14.8)	20(8.0)
	Repairing groundwater infrastructures timely when they have to be repaired	160(64.0)	46(18.4)	44(17.6)
	Contributing timely the resources for groundwater management when is needed	141(56.4)	44(17.6)	65(26.0)
	Groundwater users receive timely groundwater related financial reports	166(66.4)	47(18.8)	37(14.8)
Collaboration	Addressing groundwater management challenges	195(78.0)	15(6.0)	40(16.0)
	Creating community awareness on groundwater management	211(84.4)	20(8.0)	19(7.6)
	Encouraging groundwater users to participate on groundwater management	176(70.4)	29(11.6)	45(18.0)
	Enforcing various by- laws of groundwater management	180(72.0)	40(16.0)	30(12.0)

Numbers in brackets are percentage.
Source: Authors

the results in this study and that of Comte et al. (2016) and Masifia and Sena (2017) is explained particularly by a presence of COWSOs in Njombe District that represent the communities in water governance including by-laws formulation. Respondents (above 50%) showed that financial reports were not shared with groundwater users; COWSOs did not accept views of the groundwater users; COWSOs did not share lessons learned and financial reports (Table 5). Quantitative results were in line with COWSO's key informants' results in Kichiwa. On one hand, the reason for not sharing financial reports, according to COWSOs was that COWSOs did not collect water charges from groundwater users because they were reluctant to pay charges and hence no need of sharing financial reports with water users. On the other hand, RUWASA argued that the problem of not paying water charges persisted because of less commitment of COWSOs to create awareness of importance for paying water charges among groundwater users implying that COWSOs were not that much effective in terms of governance. There was also poor transparency among governance actors. For instance, 86.8 and

85.2% of the respondents were not aware about sources of funds for groundwater development and they were not free to criticise water governance actors, respectively (Table 5). There was also poor transparency with regard to discussions during village assemblies; provision of financial reports; giving or accepting apologies when groundwater matters went wrong; and sharing communication and information from groundwater governance actors (Table 5). This implies that groundwater governance actors did not consider transparency. This is unquestionably explained by poor knowledge of transparency among governance actors particularly COWSOs. The results concur with those by Mandara et al. (2013), Comte et al. (2016) and Kabote and Gudaga (2018) who found that groundwater governance in Tanzania faces poor transparency among governance actors in Comoros Islands, Kenya and Tanzania.

On equitability, which is a state of providing equal opportunity to the communities to access groundwater information, 73.2% of the respondents were involved on groundwater matters regardless their income differences; and

64.4% agreed that all groundwater users were treated with respect and dignity to access groundwater points (Table 5). Other statements, which were well practised, include opportunity for men and women to hold leadership positions in COWSOs and fairly allocation of groundwater points in the communities (Table 5). This implies that equitability was effectively practised in the study area, possibly because most of the groundwater points were public and therefore everybody had an equal opportunity to access the water. The results are not in agreement with those of Mandara (2014); Nganyanyuka (2017); and Sudi et al. (2019) who argue unequal women leaders in water governance actors like COWSOs in some parts of Tanzania suggesting that more job in terms of equitability needs to be done. Furthermore, the results showed that protecting groundwater points against pollution, accessibility of water by groundwater users and availability of groundwater were efficient (Table 5). This is explained by a reason that all groundwater points were covered to protect contamination, and the water was accessible to all households. Using ANOVA, the overall mean distance from

Table 6. Distance in meters from the respondents' households to the groundwater points.

Village	N	Mean	Std. deviation	F	P-Value
Welela	78	380.13	181.140		
Kichiwa	46	430.83	199.921		
Tagamenda	68	431.43	200.230	2.580	.054
Kidegembye	58	355.17	159.365		
Total	**250**	**399.39**			

Source: Authors

households to groundwater points was 399 m (Table 6). This implies that groundwater was accessible close to the households within a distance of 400 m recommended by the National Water Policy of Tanzania of 2002 (URT, 2002). This is in line with Comte et al. (2016) and Ngasala et al. (2018) in terms of accessibility of groundwater.

The difference in distance from households to the groundwater points between the villages was not statistically significant at 5% level of significance (Table 6). The lowest mean distance was about 355 m in Kidegembye while the highest mean was about 431 m in Tagamenda. Some villages like Kidegembye had many groundwater points making every household close to the groundwater point. Kidegembye had 6 groundwater points with 154 households while Tagamenda had 4 groundwater points with 186 households; suggesting that more groundwater points should be constructed in bigger villages to ensure that water users access the water within a distance of 400 meters. About the rule of law, 49.6 % of the respondents showed that COWSOs had by-law that prohibited households to undertake socio economic activities around groundwater points (Table 5). Quantitative results were in line with information from COWSOs and village authorities. The aim of this restriction was to keep groundwater points safe and free from pollution. To implement the by-law, COWSOs imposed a fine for those who breached the law. The amount of the fine ranged between TZS 20 000 (USD 8.6) and 50 000 (USD 21.56). In terms of responsiveness, 76.4% and 66.4% of the respondents reported that COWSOs did not disseminate timely information on groundwater management and financial issues, respectively (Table 5). Other aspects of responsiveness that were poorly practised include repair of groundwater infrastructures and contribution of funds for groundwater when needed. The issue of COWSOs poor responsiveness was also reported by the District Water Department Officer as follows: "...*COWSOs are not knowledgeable on groundwater governance.* This implies that COWSOs had limited knowledge and skills to deal with governance and therefore poor responsiveness.

Realizing poor responsiveness of the COWSOs, the Water Supply and Sanitation Act No.5, of 2019 transformed them into Community Based Water Supply Organizations (CBWSOs) to improve groundwater governance in the country (Fierro et al., 2017). Some improvements considered in the proposed CBWSOs include: involvement of professionals like water technician and an accountant who should be a technician level three in accountancy. In addition, CBWSOs are owned by the village government and the communities. This is different from COWSOs which are owned by the communities alone (URT, 2019a). Unquestionably, the involvement of professionals in CBWSOs is likely to improve groundwater governance particularly responsiveness. About collaboration, 84.4% of the respondents reported that, COWSOs did not collaborate with the village governments in creating community awareness of groundwater governance (Table 5). Other areas where groundwater governance actors did not collaborate include: addressing groundwater challenges, encouraging groundwater users to participate in groundwater management and enforcing by-laws for groundwater governance (Table 5). This is attributed to lack of knowledge about governance among groundwater actors especially COWSOs. The results are in line with those of Masifia and Sena (2017); and Kabote and Gudaga (2018). This negatively affects opportunities such as sharing resources, experience, and knowledge about groundwater governance. The idea that CBWSOs should be owned by village governments and the communities is likely to produce positive results with regard to groundwater governance.

CONCLUSIONS AND RECOMMENDATIONS

The results have shown that most of the governance principles were poorly practised. Participation, equitability and efficiency were well practised while transparency, accountability, rule of law, responsiveness, and collaboration were poorly practised. It is clear from the discussion that groundwater management was also poor because of poor practise of the governance principles. The relationship between COWSOs and village governments; and poor knowledge of governance principles among COWSOs and village governments explain poor practise of groundwater governance principles. With that conclusion, the governance actors

including COWSOs; and villages governments should effectively practise governance principles particularly transparency, collaboration, rule of law, responsiveness and collaboration. This will motivate groundwater users and other governance actors to engage seriously in groundwater management. In addition, governance actors should strengthen relationship between and among themselves. This can help fostering mutual sharing of experience and opportunities in addressing groundwater governance. Furthermore, the local government at a district level should strengthen understanding and implementation of good governance among groundwater governance actors recognized by the law whether including COWSOs and village governments to enable them practise governance principles effectively for groundwater management.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

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Financial literacy and financial behaviour of micro and small enterprises in the Sunyani Municipality, Ghana

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This study sought to examine the relationship between financial literacy and financial behavior among owners/managers of MSEs in the Sunyani Municipality. Primarily, the research examined the financial literacy level as well as the extent to which financial knowledge informs financial behaviour and financial attitude which will aid in making a rational decision for their business. In accordance with the study's objective, the study employed primary data and used a quantitative approach as well as a descriptive survey design to randomly sample 230 owners/managers from five categories of MSEs in the Sunyani Municipality. From the findings, it was revealed that owners/managers of MSEs who had high levels of financial knowledge exhibited good financial behaviour and demonstrated a good financial attitude as compared to those with lower levels of financial knowledge. The positive outcomes of being financially literate were driven by behaviour such as planning expenditure and building up a financial safety net. Since financial literacy is necessary for the demonstration of good financial behaviour and attitude, it was recommended to MSEs strive for financial knowledge to enable them make good financial decisions. Again, any policy that aims at the growth and development of MSEs must include financial education since it is the key to good financial behaviour and attitudes that aids owners/managers to make good decisions.

Key words: Financial literacy, knowledge, behaviour, attitude, micro and small-scale enterprise, Ghana.

INTRODUCTION

Financial literacy among micro and small-scale rises (MSEs) is gaining prominence in development literature (Tuffour et al., 2020). This is because the financial literacy levels of owners/managers of these enterprises have implications for financial behaviour thereby affecting their financial decision-making. Financial literacy is the *sine qua non* in the management, performance, and sustenance of small enterprises (Nyabwanga, 2011). In

Nyabwanga's view, financial education builds the capacity of owners/managers which enables them to create business budgets, decide on savings plans, and make strategic investment decisions, making it possible for them to meet financial obligations.

Berman and Knight (2008) have noted that in situations where the owners/managers of enterprises are financially educated they achieve financial viability. Similarly,

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Wachira and Kihiu (2012) have averred that owners/ managers of enterprises that have achieved financial literacy are more empowered in the evaluation of financial products and services. Wachira and Kihiu further argue that financially literate owners/managers can evaluate and compare financial products such as saving products, credit and loan options payment instruments, and investments.

According to Huston (2010), the human capital of individuals, defined in terms of knowledge, skills, and attitude specific to financing, facilitates their access and usage of financial products and services which, in turn, promote access to financial products and services (Ramakrishnan, 2011). Ajzen (1991) has noted that financial literacy directly relates to self-beneficial financial behaviour. This assertion is supported by the theory of planned behaviour. According to the theory, perceived behavioral control, together with behavioral intentions directly predict behavioral achievement. That is, learning shapes behavior. Hilgert et al. (2003) tested Ajzen's Theory of Planned behaviour and found a significant association between knowledge and behaviour. They concluded that financially literate entrepreneurs can manage cash flow and credit, as well as savings and investment and, are also able to access and use financial products and services as compared to those with low levels of financial literacy.

Financial literacy is the understanding of financial products and concepts and the appreciation of financial risks and opportunities which enable a person to make informed choices about where to access financial services and products (Beal and Delpachitra, 2003; Wachira and Kihiu, 2012). The ability of owners/managers of MSEs to access financial services and products is essential to the survival and performance of enterprises. Mohd et al. (2010) and Salam (2013) have all indicated that adequate financing of MSEs directly affects their performance.

MSEs have been found to play a key role in the economies of developing countries. MSEs do this through the mobilization of idle funds (Moyi, 2013) and the promotion of indigenous technology. With a large informal sector, MSEs employ about 25% of the working-age population in most developing countries since a greater percentage of the labour force in these countries can be found in the informal sector (McPherson and Rous, 2010).

Like many countries, Ghana has identified the private sector as the engine of growth, a strategy for wealth creation, and poverty reduction (Nii, 2011). As part of the overall national strategy, the Sunyani Municipality is aggressively pursuing prudent private-sector friendly programmes and projects towards accelerated socio-economic development of the District. This is being done using financial literacy programmes by MSEs' promotion institutions as well as microfinance institutions (Alhassan, 2016). State institutions such as the Business Advisory Centre (BAC) and the National Board for Small Scale Enterprises (NBSSI) are mandated to build the capacities of owners/managers of MSEs.

Aside from these state promotional institutions of MSEs, some banks, and non-bank institutions also operate credit with education which aims to build the business and financial capacities of MSEs.

According to Van Rooij et al. (2011), financial literacy is a broader phenomenon that triggers an individual to make financial decisions notably equity market participation, diversification of portfolio, ability to avoid extreme indebtedness, and making sound investment decisions that bring liberation to the people. However, despite the financial capacity programmes of both state and non-state institutions, there are concerns that financial institutions have not been able to include a vast segment of the population, especially the underprivileged sections of society such as small firms into the fold of basic financial services due to their poor financial behaviour and attitude which affects their decision making for business growth (Nunoo and Andoh, 2012). Moreover, MSEs market has been perceived as risky, costly, and difficult to serve banks and financial institutions (Ackah and Vuvor, 2011). In the case of Sunyani Municipality, microfinance institutions, according to Alhassan (2016), have contributed to the growth of small businesses by assisting them to overcome their financial challenges. Owusu (2015) explains that despite these efforts, businesses still lack financial literacy resulting in poor decision making which ultimately affects their financial inclusiveness due to poor financial judgments.

The liberalization of Ghana's financial sector in the 1980s witnessed the proliferation of bank and non-bank financial institutions across the country. With poor supervision from regulation institutions, many of these financial institutions, especially microfinance institutions often prey on the poor financial literacy levels of their clients. By the end of 2019, many owners of MSEs, institutions, and other individuals had lost their investments to some financial institutions.

Following from this, the Ministry of Finance and the Central Bank of Ghana put in measures to overhaul the financial sector which led to the closure of many financial institutions. Many have attributed the success of the scam to the inadequate financial knowledge of owners/ managers of SSEs. This study examined the financial literacy levels of the owners/managers of MSEs and how their financial knowledge affects their financial behaviour and decision-making.

Theory and empirics on financial literacy and financial behaviour

Different theories have been used to explain financial literacy and financial behaviour however, in relation to

this study, the researcher considered two core theories which are evidenced to be highly related and will be very instrumental in forming the foundation on which the objective of this study will be fulfilled. Financial literacy and financial behaviour are underpinned by the Human Capital Theory and the Theory of Planned Behaviour.

The association between financial literacy and financial behaviour for micro and small enterprise owners/ managers is underpinned by the nexus between the Theory of Planned Behaviour (Ajzen, 1991) and the Human Capital Theory (Becker, 1964). According to the theory of Planned Behaviour, information affects the human capital of individuals which, in turn, influences their attitudes in decision making. The Human Capital Theory, of Scultz (1961) advocates that education or training imparts useful knowledge and skills to workers which, in turn, inform their thoughts, attitudes, and behaviour. Whiles, the central premise of the Theory of Planned Behaviour is that intentions mediate the relationship between attitudinal beliefs and actual behaviour (Ajzen, 1988, 1991). Influences such as traits, demographics, skills, social, cultural, and financial support affect attitudes and indirectly intentions and behaviour (Kadoya and Khan, 2017).

The association among these theories depicts that financial literacy can inform financial behaviour in that once a person is financially literate; he/she will be able to make good decisions on accessing and using financial products and services. This is because as people access and use more financial products and services, they tend to learn from their experiences and thus, become financially literate.

For owners/managers of MSEs, investment in human capital in the form of knowledge, skills, competencies, experience, and attributes, enables them to make informed decisions which often contribute to the achievement of firm goals (Marimuthus et al., 2009). Becker (1964) distinguishes between specific human capital and general human capital.

According to Becker, while specific human capital builds the capacity of people to perform a specific activity general human capital is the knowledge that is valuable across the board. According to Huston (2010), financial literacy is viewed as finance specific to human capital. Thus, it is an input intended to increase a person's human capital, specifically financial knowledge, and financial application.

Kadoya and Khan (2017) has identified some of the important skills of successful entrepreneurs to include accounting, marketing, sales, and financial management. The assumption is that the higher human capital of entrepreneurs increases the chances of their company's survival and success (Mahdavi and Horton, 2014). According to Hilgert et al. (2003), managers who are financially literate or have acquired financial knowledge can control their behaviour in financial matters. These behaviours include management of cash flow and credit,

savings, and investment. Evidence has also shown that for any small enterprise to be successful, owners/ managers must possess appropriate skills and abilities to run the business (Okpara and Wynn, 2007; Orisanaye, 2004).

The above theories, in one way or the other, explain how stakeholders can move from being passive collectors and reporters of information to active users of the information for firms' activities. Second, the theories help managers or owners to better understand the kind of evaluation they need to make in their day-to-day financial decisions. Third, the theories help the evaluator develop research questions that focus on changes that can occur given the particular strategies that are operative at the system, programme, and client levels.

Financial literacy is knowledge of financial concepts, skills, and attitudes that translate financial knowledge into financial behaviour that results in good financial outcomes (Sebstad et al., 2006). According to Agarwalla et al. (2015), financial literacy is often hypothesized as the essential knowledge of financial matters and desirable attitudes which leads to outcomes related to money and finance. Worthy of note is the fact that the various definitions view financial literacy, not as an end but as a means to an end (Lusardi and Mitchell, 2014; Mandell, 2008). People invest in financial literacy when they perceive that they need it to meet their financial and life goals. This is an indication that financial literacy requirements vary among people and groups.

One major criticism of financial literacy definitions is that, over the years, the definitions do not stress the influence of an increasingly complex and volatile economy (Remund, 2010). Remund, thus proposes a definition of financial literacy as a measure of the degree to which one understands key financial concepts and the confidence to manage personal finances through the appropriate short-term decision-making and sound long-range financial planning, while mindful of life events and changing economic conditions.

There are levels of financial literacy even though the categorizations are somewhat difficult (Atkinson and Messy, 2012). According to Lusardi and Mitchell (2011), any determination of financial literacy levels must take into consideration financial attitudes and financial behaviours while keeping in mind four key principles: simplicity, relevance, brevity, and capacity. Despite these guiding principles, the difficulty in determining the levels of financial literacy still existed until the OECD (2013) developed acceptable benchmarks to that effect. The OECD proposed a complete questionnaire that includes items on financial knowledge, financial behaviour, and financial attitudes (Atkinson and Messy, 2012).

Financial literacy is expected to translate into good financial decision-making. To this end, it is incumbent on owners/managers of MSEs to acquire skills in money management. Money management skills, usually, boarder on financial needs, acquisition of funds, and how they

should be allocated (Remund, 2010). To achieve these goals, Inyang and Enuoh (2009) have advised entrepreneurs to maintain the correct proportion of the firm's finances in saving, insurance, and investment. The acquisition of money management skills through financial literacy is, therefore, a necessary factor in entrepreneurial success.

Several empirical studies suggest that high levels of financial literacy translate into good financial behaviour. In a study on the relationship between financial knowledge and financial behaviour among households in Michigan Hilgert et al. (2003) measured financial knowledge in terms of cash-flow management, credit management, savings, and investment while financial behaviour was measured using financial attitude, positive childhood experiences, and tax incentives. The study found a significant relationship between financial knowledge and financial behaviour across a range of personal finance activities. Major sources of financial knowledge that the study identified are learning experiences, the media, friends, family and knowledge from a formal school. However, the study did not provide conclusive evidence on how financial literacy leads to sound personal finance decisions.

In another study that examined the effect of financial literacy on financial decision-making in the Kissi South District of Kenya, Nyabwanga (2011) found that knowledge in business management directly affects the financial decisions and performance of SSEs. The study concluded that enterprises with high knowledge in financial and business management take good financial decisions as compared to those with low knowledge in business. In a similar study in Bosnia and Herzegovina, Bruhn and Zia (2011) found a significant effect of business training on survival rate among entrepreneurs with higher ex-ante levels of financial literacy. Bruhn and Zia concluded that enterprises that receive financial training are more likely to implement new production processes, inject new investment, operate separate business and personal accounts, and refine existing loans for more favorable terms.

This study draws important lessons from the theoretical and empirical review of financial literacy and financial behaviour and decision-making. The various discussions show that financial literacy is not an end in itself but a means to an end. While financial literacy is knowledge of financial concepts, skills, and attitudes that translate financial knowledge into good financial behaviour and good business decision-making, financial behaviour borders on taking good decisions concerning accounting, marketing, sales, and financial management. Other best financial behavioral are exhibited in the management of cash flow, credit, savings, investment, and the use of financial products and services.

METHODOLOGY

The study is a cross-sectional and explanatory research design.

The analytical design is both descriptive and inferential. The research is deductive, and it follows a quantitative strategy and is supported by philosophical underpinnings of positivism epistemology and objectivism ontology. The study analyzes the association between financial literacy and financial behaviour for selected MSEs in the Sunyani Municipality. The choice of this design was informed by studies by Hilgert et al. (2003) and Nyabwanga (2011).

A multistage sampling method, consisting of probability sampling techniques, was used to select the respondents for the study. First, the total number of MSEs in the Sunyani Municipality was determined after which they were stratified into five subsectors based on the National Board for Small Scale Industries (NBSSI) groupings of MSEs. The subsectors were agrochemical, wood processing, dressmaking, food, and hairdressing. The total number of MSEs in the municipality provided by the NBSSI at the time of the study was 650. To ensure the representativeness of the sample to the study population, a total of 242 MSE operators were sampled. This was based on the sample size determination table of Krejcie and Morgan (1970) which state that a population of 650 requires a sample size of 242 given a 95% confidence level with 0.05 degree of accuracy. The proportionate sampling was then applied to determine the sample for each stratum. Due to the homogeneity of the SSEs under each stratum, the simple random sampling technique was used to select the MSEs from each stratum. The distribution of the sample by subsector is captured in Table 1.

For this research, data were collected on the financial literacy levels of small business entrepreneurs, based on the different dimensions of financial literacy identified in the conceptual framework. Data were collected quantitatively. The quantitative data collection instrument was an interview schedule. This tool was used to collect data from the MSEs 0perators mainly because most of them have only basic education or informal education (GTUC, 1995). It was therefore assumed that some operators may not be able to read and write. By using an interview schedule possible errors that could result from misinterpretation of questions were avoided.

A correlational test was employed to assess the impact of financial literacy on the financial behaviour and attitude of the target population. Here, financial knowledge, awareness, and engagement in financial activities were used to measure financial literacy and formed the dependent variable whilst financial behaviour and financial attitude described the extent of respondents' engagement toward the financial concepts, products, and services.

The core questionnaire, therefore, included items that were used to test the financial knowledge levels of the respondents. The items were chosen to cover a range of financial topics with various degrees of difficulty even though none of them was excessively complex enough to require expert knowledge. The process of counting correct responses begins by assigning 1 to a correct response and 0 in all other cases. The combination of knowledge items was summed and classified into a high level of knowledge, a moderate level of knowledge, and a relatively low level of knowledge using Chen and Volpe (1998) and OECD (2013) criteria. The mean percentage of correct scores was grouped into three grades using (1) 80% and more (2) 60 to 79% and (3) below 60% for high, moderate, and low levels of financial knowledge respectively.

RESULTS AND DISCUSSION

Out of the 242 sampled owners/managers, 230 of them consented to be interviewed. The discussion is therefore based on a response rate of 95%.

Table 1. Population and sample size of MSEs operators.

SSEs	Population	Percentage to population (%)	Sample size
Food industry	201	31	75
Dressmaking	196	30	73
Agrochemical	148	23	55
Wood processing	86	13	32
Hairdressing	19	3	7
Total	650	100	242

Source: NBSSI/BAC, 2015.

Background characteristics

The variables examined for the background information of the owners/managers are age, sex, and educational level. The enterprise characteristics covered some years in business, registration status, association status, and type of ownership.

Findings from the study showed that the youngest respondent was 27 years while the oldest was 54. The mean age was 39 years. The study revealed that young people owned most of the enterprises and this could be attributed to the demographic area chosen for the study where youth in their early years were more vibrant and ready to start a business for themselves rather than staying with an older population for support and dependence (Booyens and Galvaan, 2015). For sex, the majority (52.6%) of the 230 respondents was males, and the rest (47.4%) were females. Also, most of the respondents had either basic (40.4%) or secondary education (40.3%) education with the rest having acquired tertiary (18.3%) education or no formal education (1.3%). The examination of sex distribution and education was necessary because these two variables to a large extent determine his/her literacy level (Longinos et al., 2019).

Aside from the background information of respondents, the study further examined the characteristics of the sampled enterprises. The discussion covered the number of years in business, association status, and type of ownership.

Concerning the number of years in business, the minimum was one year, and the maximum was 22 years. The distribution of the number of years in business was approximately normal. The mean number of years in business was 10.4 years (skewness = 0.163, median = 10 years) with a standard deviation of 5.9 years. Another enterprise characteristic that the study examined was association status. Out of the 230 sampled enterprises, 52.6% belonged to an association or group while the rest (47.4) did not. The sampled enterprises were dominated by sole proprietors (63.0%), followed by family businesses (24.3%) and partnerships (12.7%) in that order.

Financial literacy levels of MSEs' O\owner/managers

To determine the general financial knowledge levels of the MSEs' owners and managers, several items were listed to elicit information on the knowledge of financial products, services, and concepts. The discussion centered on respondents' knowledge of financial products and services. Respondents were asked to indicate their knowledge of investment accounts, mortgages, secured bank loans, unsecured bank loans, current account and savings accounts, insurance, stock/shares, and bonds.

Out of the 230 responses, 73.5% had heard of investment accounts; 54.3% had heard of mortgages; 87 and 86.5% had heard of secured and unsecured bank loans respectively. In addition, 80.4% of the respondents had heard of insurance, 77 and 97% of them had heard of current and savings accounts respectively with only 30.4% each knowing stock/shares and bonds. It can be deduced that respondents had higher knowledge of some products than others. A binary scale was developed for each of the items with zero indicating no knowledge and one indicating knowledge of these services and products. An index involving these nine items (investment account, mortgage, secured bank loan, unsecured bank loan, insurance, current account, savings account, stock/shares, and bonds) was created to measure the financial knowledge of the respondents.

The data showed a minimum financial knowledge score of one and a maximum score of nine. The distribution of the financial knowledge score was positively skewed (skewness = 0.593) as most of the respondents had financial knowledge scores of more than 6.16 (mean). The median financial knowledge score was 7.0 with a quartile deviation of 2.5. According to Atkinson and Messy (2013), a financial knowledge score of five or more indicates that people are financially literate.

Financial behaviour

To examine the financial behaviour levels of the respondents, a five-point scale item, with one indicating least agreement to five indicating strong agreement, was

designed and administered to the respondents. The items covered monthly financial budgets, spending, the decision on purchases, savings, borrowing, monitoring of cash flows, and payment of bills and taxes. The details of the descriptive statistics related to the distribution of the financial behaviour of respondents are presented in Table 2.

The first item examined as part of the analysis of the financial behaviour levels of respondents was budgeting for monthly financial activities. The mean score was 4.3 (skewness = 0.17) with a standard deviation of 0.5 (Table 2). Most of the respondents agreed that they draw budgets for their monthly financial activities. This is evident in the high median score (4).

The second item examined concerning the financial behaviour of the sampled respondents was planning before spending. Data from the field show that the distribution of planning before spending was approximately normal (Skewness = 0.03). The mean score for planning before spending was 4.2 with a standard deviation of 0.55 (Table 2). The median score of four suggested that owners/managers of MSEs planned their spending.

The ability of entrepreneurs to consider products from different market outlets before making purchases is one of the attributes of people with good financial behaviour (OECD, 2013). Respondents were therefore asked to indicate the extent to which they agree with this proposition. The mean score on the consideration of products from different market outlets before purchases were made was 3.1 (Median = 3, Skewness = 0.21) with a standard deviation of 0.76 (Table 2).

The median score of three indicates that more than half of the 230 respondents did consider products from competing market outlets before making purchases.

Another issue of interest related to the financial behaviour of entrepreneurs is the ability to consider competing for interest rates before savings are made. Based on the data as presented in Table 2, almost all the respondents considered various interest rates before savings. This is demonstrated by the minimum score of four and a median score of 4.0 (Mean = 4.3, Skewness = 0.86) with a quartile deviation of 0.5.

Like the distribution on the consideration of competing interest rates on savings, the study examined the consideration of competing interest rates on loans. A mean score of 4.2 suggests that most of the respondents considered the interest rates from various financial institutions before borrowing. The median score was 4.0 (Skewness = 0.18) with a standard deviation of 0.53.

The liquidity of every enterprise is essential for its survival (Remund, 2010). In this respect, owners/managers of enterprises that keep a close eye on the cash flow of their enterprises ensure that there is adequate liquidity for the running of their businesses (OECD, 2013). 80% of the respondents monitored the cash flow of their enterprises as depicted by a minimum

score of 4.0. The distribution of the score concerning the monitoring of cash flow was negatively skewed (Skewness = -1.6) indicating that the monitoring of cash flow score for most of the respondents was higher than the mean score of 4.8. The median score was five with a quartile deviation of 0. This value suggests that the respondents were keen on maintaining enough cash flow for their business to thrive.

The final variable examined about the financial behaviour of respondents was their agreement concerning the timely payment of taxes and bills. As captured in Table 2, most of the respondents agreed that they pay their bills and taxes on time. While the minimum score was 4.0, the maximum was 5.0. The median score for the timely payment of bills and taxes was 5.0 (Mean = 4.7, Skewness = -0.68) with a quartile deviation of 0.5. It can be deduced from this distribution that almost all the respondents paid their bills and taxes timely. As agreed by Garang (2016), people with knowledge of financial terms understand how important it is to pay bills on time to build proper financial connections.

Further analysis was done to determine the overall financial behaviour level of the respondents. In all, seven items were used to measure the financial behaviour level of the respondents. As a result, an aggregate score of 21 or more was considered good financial behaviour while a score of less than that signified bad financial behaviour Data from the field showed that the minimum financial behaviour aggregate score was 23 as compared to a maximum of 29. The median aggregate score was 25 (Mean = 25.4, Skewness = 0.67) with a quartile deviation of 1.5. It can be seen from the descriptive statistics that the respondents generally had good financial behaviour.

Relationship between financial knowledge, financial behaviour, and financial attitude

The relationship between financial knowledge, financial behaviour, and financial attitude was examined using Spearman's Rank Order Correlation test. As explained by Tuffour (2020), managers who have acquired knowledge and skills in financial matters have a positive attitude towards budgeting, financial management, and other financial matters which positively affect their behaviour and inclusiveness in financial services. The data, as presented in Table 3, show a direct correlation between financial knowledge, attitude, and behaviour (Rho >= 0.266, p-value = 0.000).

Owners/managers of MSEs who had high levels of financial knowledge exhibited good financial behaviour and demonstrated a good financial attitude as compared to those with lower levels of financial knowledge. The positive outcomes of being financially literate were driven by behaviour such as planning expenditure and building up a financial safety net.

Table 2. Descriptive statistics of financial behaviour of respondents.

Item	Min	Max	Mn	Md	Sk	Sd	Qd
Budget for monthly activities	2	5	4.3	4	0.34	0.5	0.5
Spending is always based on planning	3	5	4.2	4	0.03	0.55	0.5
Purchases based on competitive products and prices	2	5	3.1	3	0.21	0.76	0.5
Savings based on competing interest rates	4	5	4.3	4	0.86	0.45	0.5
Borrowing based on competing interest rates	3	5	4.2	5	0.18	0.53	0.5
Business monitors cash flow	4	5	4.8	5	-1.6	0.39	0
Bills and taxes are paid on time	4	5	4.7	5	-0.68	0.47	0.5

Source: Field data, 2017, 'Min- minimum, Max- maximum, Min- mean, Md- median, Sk- skewness, Sd- standard deviation, Qd- quarter deviation.'

Table 3. Relationship between financial knowledge, financial behaviour, and financial attitude.

		General financial knowledge	Financial behaviour	Financial attitude
General financial knowledge	rho	1.000	0.289**	0.266**
	P-value	.	0.000	0.000
	N	230	230	230
Financial behaviour	rho	0.289**	1.000	0.764**
	P-value	0.000	.	0.000
	N	230	230	230
Financial attitude	Rho	0.237	0.630	1.000
	P-value	0.000	0.000	
	N	230	230	230

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Author

The data were further disaggregated by type of enterprise. The owners/managers of agrochemical enterprises with high levels of financial literacy generally demonstrated good financial attitudes and behaviour (rho >=0.375, p-value = 0.000).

The relationship between financial knowledge and financial behaviour (rho <=0.210, p-value >= 0.073) and financial attitude (rho <= 0.237, p-value >= 0.925) was not significant for wood processors, dressmakers, food industry and hairdressers. However, the wood processors, dressmakers, food industry, and hairdressers that demonstrated good financial behaviour also had good financial attitudes (rho >= 0.565, p-value <=0.023) (Table 4).

Conclusions and policy implications

This paper analyzed the relationship between financial literacy and financial behaviour. It concludes from the findings that the financial literacy levels of MSEs' owners/managers are relatively high. This is evident in the high financial knowledge, financial behaviour, and the financial attitude of the owners/managers of MSEs in the Sunyani Municipality.

Generally, owners/managers of MSEs that are knowledgeable in financial issues also demonstrate good financial behaviour and attitude. However, good financial behaviour does not lead to a good financial attitude. Since financial literacy is necessary for the demonstration of good financial behaviour and attitude, it is recommended to MSEs strive for financial knowledge to enable them to make good financial decisions. Also, any policy that aims at the growth and development of MSEs must include financial education since it is key to good financial behaviour and decision-making.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

Table 4. Relationship among financial knowledge, financial behaviour and financial attitude by type of enterprise.

Type of Enterprise			Financial behaviour	Financial attitude
Agrochemical	General financial knowledge	rho	0.375**	0.504**
		P-value	0.007	0.000
		N	50	50
	Financial behaviour	rho		0.916**
		P-value		0.000
		N		50
Wood Processing	General financial knowledge	rho	0.102	0.018
		P-value	0.586	0.925
		N	31	31
	Financial behaviour	rho		0.618**
		P-value		0.000
		N		31
Dressmaking	General financial knowledge	rho	0.194	0.183
		P-value	0.152	0.147
		N	64	64
	Financial behaviour	rho		0.565**
		P-value		0.000
		N		64
Food Industry	General financial knowledge	rho	0.210	0.120
		P-value	0.073	0.309
		N	74	74
	Financial behaviour	rho		0.861**
		P-value		0.000
		N		74
Hairdressing	General financial knowledge	rho	0.184	0.237
		P-value	0.588	0.482
		N	11	11
	Financial behaviour	rho		0.674*
		P-value		0.023
		N		11

**. Correlation is significant at the 0.01 level (2-tailed),*. Correlation is significant at the 0.05 level (2-tailed).
Source: Author

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