

# Access to Financial Capital Influencing Women Participation in Artisanal and Small Scale Mining: A Case of Taita Taveta County, Kenya

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**Abstract:** The Artisanal and small-scale mining (ASM) sector plays a significant role in the growth development of the Kenyan economy. The ASM sector act as a major source of livelihood for both men and women who engage in the sector. However, women are yet to fully benefit from this sector due to socio-economic factors such as cultural practices, legal framework as well as access to finance constraints. Nevertheless, while empirical evidence seems to be conclusive concerning socio-cultural factors, limited studies have focused on the issue of financial access-the focus of this investigation. We apply a cross-sectional survey design with a target population of 230 women working in ASM sector within Taita Taveta county. Stratified sampling was adopted to select 146 women from whom data was collected using semi-structured questionnaires. We establish that accessibility to mining tools and equipment, skills and knowledge on finance affects women participation in the ASM negatively. Provision of credit and knowledge of financial management is very critical towards enhancing women participation in the ASM sector in Taita Taveta.

**Key Words:** Finance, Artisanal Mining, Cross-Sectional, Participation, Small Scale.

## I. INTRODUCTION

Globally, more than 100 million individuals benefit from ASM specifically, emerging economies of Asia, Africa, Oceania, and South and Central America (Hilson & McQuilken, 2014). ASM supports hundreds of millions of people livelihoods and has grown expressively in recent times, from a projected 10 million mineworkers in 1999 to some 20-30 million two decades later. Along with the growing recognition of the socio-economic importance of artisanal and small-scale mining, is the realization that gender inclusivity is key to the success of efforts to toughen mining as a supportable financial sector (GrOW, 2017).

Artisanal and small-scale mining is a labor-intensive industry that requires limited investment and skills to take part (Maclin, Kelly, Perks, Vinck & Pham, 2017). The process involves the use of simple tools like picks, shovels, chisels and hammers to exploit precious minerals and metals from the ground (Eftimie, Heller, Strongman & Hinton, 2012). This sector is among the key sources of livelihoods for millions of

citizens especially, in developing countries (Bansah, Duamkor-Dupey, & Sakyi-Addo, 2017).

It is estimated that there are more than eight million artisanal and small-scale miners in Africa (Lahiri-Dutt, 2015). In most areas of sub-Saharan Africa, ASM has overhauled small-holder farming as a principal livelihood activity (Verbrugge, 2015). For instance, in Sudan ASM has a significant contributor to the national economy because, it accounts for about 85 per cent of total gold extracted yearly from 2010 to 2015 (Ibrahim, 2015). According to the Embassy of Sierra Leone in Washington DC, USA, 90 per cent of mineral export in Sierra Leone can be attributed to thriving artisanal diamond mining in the country (Bansah *et al.*, 2017). In Kenya, the mining segment contributes about 0.7 per cent of the nation's Gross Domestic Product (GDP) with a potential for better performance (GOK, 2020). In addition, this sector employs thousands of Kenyans both directly (those involved in mining activities) or indirectly through industries manufacturing commodities from minerals. As a result, people employed in the sector can better their living standards through the incomes earned.

Artisanal and small scale mining is professed by the government as a multimillion mechanical action for demonstrating business to numerous networks (Abebe, 2016). The law perceives artisanal and small scale mining tasks and stipulates clear procedures for building up safe activities, an unmistakable take-off from the past enactment which likewise banned artisanal mining. These progressions give a profitable stage that enables networks to attempt mining exercises in more secure situations while enabling them a more noteworthy chance to profit from minerals inside their properties (International Energy Agency(IEA), 2012). The occurrence of ASM operations in Kenya is located mostly along coastal region Taita Hills to the Uмба Valley of Northern Tanzania, going across Tsavo, Kasigau and Kuraze areas. Taita Taveta County is presently the primary source of Tsavorite in the world. Among other minerals available in the County are iron ores, gemstones, manganese, graphite, building stones and sand. The county is also gifted with one of the wealthiest minerals deposits in Kenya and the Eastern

Africa region by an extension (Mwakumanya, Maghenda & Juma, 2016).

Women in Kenya are an important part of artisanal mining, taking on roles from panning to processing and then trading of goods and services in the value chain (see Figure 1.1) (Omolo, 2014). Female's participation varies by country and mineral, and despite the challenges they face, an initial analysis established that women do participate in the extractive industry value chain (Tschakert, 2009).

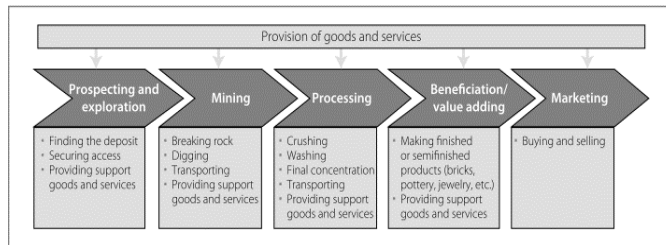


Figure 1: Artisanal and Small-scale Mining Value Chain

Nearly 30 per cent of the global artisanal are women and youth who are involved in numerous jobs running from work concentrated mining techniques to the handling part of distinctive mining (Mwakumanya *et al.*, 2016). By and large, the role of women and youth in artisanal mining very expressively from the ones of male and include straight support in mining exercises which are regularly disregarded by activities and improvement programs coordinated at catalysing the change of artisanal mining (Anyona & Kipsang, 2015). Women are mostly engaged in activities such as burrowing, panning, handling, transporting, pulling, cooking and cleaning on minerals. These are low paying jobs as opposed to high paying like going down into pits to mine. In this way, women's roles are generally less advantageous and productive than different roles commanded by men (e.g. owners, and managers).

Women encounter a myriad challenge in this sector with the key among them being inadequate finance. For instance, the obstructions on women's territory rights prevent their capacity to get different assets, unfit to use the land as collateral to get credits, and, they also experience issues of contracting work when required. In addition, they are unable to get to other steady administrations, for example, augmentation projects and preparing on imaginative land administration approaches (Anyona & Kipsang, 2015). Although women expressively involve themselves in ASM, men embrace governing and proprietorship of most assets and financial capital. The evidence awesomely shows that land (including mining zones), proceeds from mining and other activities, mining and farming Women tools, homes, crops, and in some cases even youngsters are principally claimed and controlled by men (Eftimie *et al.*, 2012).

Previous approaches on women in development take cognizance that the role played by women in development in communities had been ignored and this has resulted in their exclusion in both the design and implementation of

development projects (Inglehart & Norris 2003). Proponents of this approach argue that effective and efficient development requires the active participation of both genders. In the mining sector, there are structural inequalities and discrimination in access to resources, skills and the market which impact negatively women more than men. The Gender and Development (GAD) notion views women as mediators of change rather than as passive receivers of progress efforts (Sadan, 2004). In this case, women are not supposed to engage only in manual jobs in mining such as cleaning the whole value chain instead. One of the approaches recommended by the GAD approach is the self-organization of women at the local, regional and national levels. Women in mining associations help women to advocate for issues that concern them and government can adopt and enforce equal opportunity laws in artisanal mining. The GAD concept advised on an institutional change within socio-economic and political structures to eliminate the gender variations and strengthens the position of women.

The majority of women miners use social networks to raise finances for facilitating registration and obtaining permits for operations. This is consistent with the social capital theory which posits that social networks have gained momentum since the 1960s as avenues for raising funds especially for low-income groups (Woolcock & Narayan, 2000). The proponents of the theory argue that persons who are more united into their systems have a better life expectancy (Berkman & Syme, 1979). The concept of social capital recommends that collective efforts are interceded by the presence or absence of trust, reciprocity and cooperation. This theory guides the study in investigating sources of finance for women and how these impacts their operations.

Empirically, Mwakumanya *et al.* (2016) indicate that women participation in artisanal mining in Kenya is hindered by inaccessibility to financial credits, low-income levels/high poverty levels, reduced/low wages in the artisanal mining sector, expensive transport to mining sites, lack of capital for the purchase of equipment, lack of ready market for the minerals, and lack of alternative markets. In another study, Anyona and Kipsang (2015) report that in Taita Taveta county, ASM sectors is male-dominated due to insufficient capital by women. Similar findings are observed by Fearon and Agbah (2015) for the case of Birim North District of Ghana where it was revealed that women support in artisanal mining in Africa is affected by lack of capital and financing for the mining activities. In addition, Bansah, Barnes-Sakyi-Addo and Dumakor-Dupey (2016) argue that artisanal and small-scale mining contribution to the economy is threatened mainly by lack of financial support and small technical assistance from financial institutions and stakeholders.

According to Dinda (2013) Social capital contributes to economic growth by focusing on the importance of trust of members. To be competitive in artisanal mining, women generate money from various sources which include self-help groups, merry go round, women fund among others probably

due to the inability to raise collateral to secure bank loans. A study has established that financial constraints affect the participation of women in ASM activities especially in developing countries (Rickard, Treasure, McQuilken, Miahlova & Baxter, 2017). This study has observed that the majority of women do not have control over resources such as land, finances and even getting a practising licence is quite difficult for most of them. In addition, the study noted that in Tanzania, traditional beliefs deny women opportunities in exploiting their potentials in the mining sector. The inability for women to obtain equipment, mining tools and the necessary technology is another hindrance for women participation in the ASM sector. Furthermore, the study argues that women are often put at the periphery when it comes to decision making in the industry and this impairs their active participation.

Evidence suggests that ASM sector contribute greatly to job creation and income generation. In addition, women especially in developing countries are at a disadvantage when it comes to ASM industry. It has also been demonstrated that women gain very little in the industry due to their peripheral roles. Lack of adequate financial support has been found to have a great influence on women's participation in ASM sector. Nevertheless, most of the reviewed findings are based on expert reports and not empirical investigations which have the advantage of getting first-hand information from the field. In addition, these studies have paid limited attention to financial aspects such as sources of finance, and financial management skills. Furthermore, most of the reviewed studies are majorly based on merely descriptive statistics. Apart from descriptive statistics, the current study has also adopted regression analysis which is a reliable method of identifying the impact of explanatory variables on the variable of interest. The current study has addressed these knowledge gaps. In addition, the study has offered policy recommendations that could enhance women participation in ASM sector and hence, the contribution of the sector to the overall economic growth and development.

The rest of the paper is organized as follows: section 2 highlights the methodology of the study, while section 3 presents findings and discussion. Finally, section 4 concludes and offers policy recommendations.

## II. METHODOLOGY

### 2.1 Conceptual Framework

Linking social capital with ASM women groups social support in the informal networks is central to objective and subjective welfare. Social capital is viewed as an enabler and it is used as a source of information among group members through informal sharing, personal and psychological support, the frame of reference and mentorship, access to resources through sharing and utilization in the groups, the source of potential suppliers and customers for their products. Some of the most utilized sources include self-help groups, women funds groups, merry go rounds and family members financial

support (Kabeer, 2001). Although social capital does not necessarily translate to financial support, the group social network through access to information on economic opportunities can be a gateway to the use of additional financial aid. This an excellent platform for table banking which is a source of funds to help them climb the value chain. The women require finance to support their operations in terms of formalization (registration, obtaining permits/licenses) and acquisition of tools and for trade. Lack of capital could render the women either ineffective or play low roles associated with poor pay.

### 2.2 Research Design, Sample and Data

The study adopted a cross-sectional research design with a targeted population of 230 women in ASM sector within Taita Taveta county. Out of these, a total of 146 samples was selected using a stratified sampling approach. Stratification was based on the groups within which women belonged to. There were 16 groups in general and hence, simple random sampling was applied to each group to arrive at proportionate sample size. This technique was employed to overcome selection bias, which could have led to biased responses and hence, findings. Semi-structured questionnaires were used to collect data. The analysis of data was done using both descriptive and regression analysis with the aid of SPSS version 21.

## III. FINDINGS

We collected data from 146 women who participated in ASM within Taita Taveta County which means that a 100% response rate was achieved. Concerning demographic characteristics, the study reveals that the average age of the women who participated in ASM was 40.12 years with a minimum of 20 and a maximum of 67 years at the time of this study. This implies that the young, as well as the elderly women, participate in ASM. In addition, these findings show that age is not a barrier to participation in ASM. Concerning the number of years, they had spent in ASM, the study has established an average of 8.06 years with a minimum of 0.5 years and a maximum of 28 years. This suggests that most of them were more experienced in ASM activities and therefore, they were competent enough to participate in the study. In terms of distance, the respondents had to cover an average of 12.93 Km from their homes to the nearest ASM industries per trip with a minimum of 0.2km and, maximum of 39km. This implies that most women travel a long distance to get to the mining site, and an indication of the struggle they undergo to earn a living. The results show that majority of the women (53.8%) are married while the rest are either separated (20.3%) or single (18.8 %). Women who are married have relatively more financial burden and hence the need to look for opportunities to take care of the household needs or supplement their husband's income. This could explain the reason why more married women have to endure hardships in the mines in search of livelihoods.

On the level of education, the majority of the women had primary level certificate (57.9%), followed by those with secondary level education (37.1%). Similar results were reported for the case of Uganda where a majority of women who participated in ASM activities had a basic level of education (DRASPAC, 2017). The low level of education could be among factors explaining why women work in less paying jobs where they earn very little as compared to men. Next, summary results on women occupation indicate that majority (63.7%) of the respondents considered mining as their major source of income. This was followed by 19.05 per cent of the respondents who indicated farming as their main source of income. Findings on occupation indicate that majority of the women who participate in the ASM are engaged in the selling of minerals, especially precious stones after they have been cut and engraved (54%). This was followed by those engaged in locating mineral deposits (access to mineral deposits) at 34 per cent, and then 18% who helped in processing the ores (Figure 2).

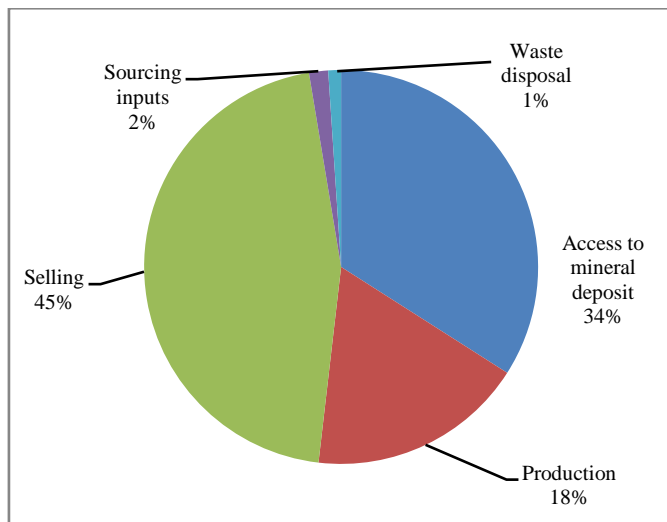


Figure 2: Nature of Work in Mining Operations

Source: Author (2020)

This means that women are involved in the lesser paying jobs compared to their male counterparts. The actual mining activities (digging of the ores) are left to men and these fetch quite a large amount of incomes since they are riskier. Grinding (pulverisation to the size of fine sand or flour) of ore is done mainly by women using grinding stones, who may be paid or perform the service for free, if a spouse of the miner providing the ore. In addition, the results imply that women were mainly engaged at the subordinate level of the ASM value chain, where they help in low-end activities like vending food, credit, and carrying and cleaning of ores in the mining sector. In some extreme cases, women help their husbands as unpaid workers in handling the mining task at their home.

### 3.1 Effect of Access to Financial Capital on Women Participation in ASM

The study investigated how access to financial capital affects women participation in artisanal and small-scale mining. We sought to establish sources of finance for the women, constraints faced in accessing assets, markets and services as well as access to credit. The study brings a discussion of the descriptive statistics followed by regression analysis. To start with, Figure 3 illustrates various financial institutions that women belonged to and from where they could save and possibly obtain credit to finance their mining activities.

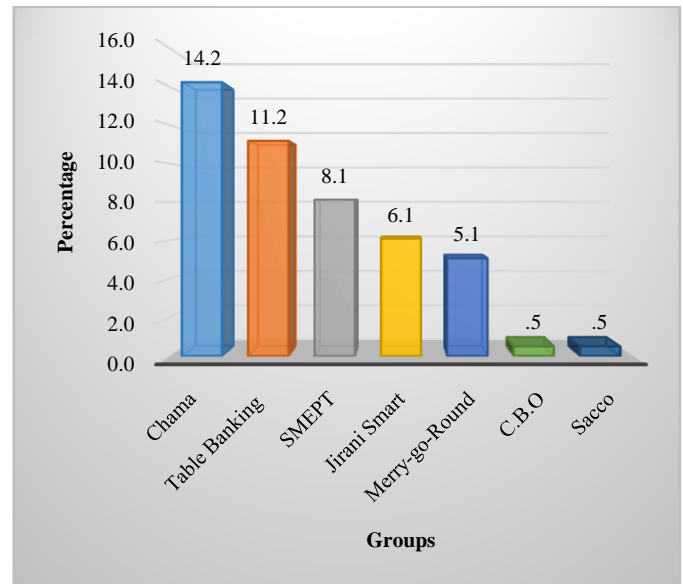


Figure 3: Financial Sources

Source: Author (2020)

The results show that women belonged to several informal self-help groups that supported them in different ways. The most common groups were religious-related social gatherings, financial support self-help groups like Savings and Credit Cooperatives (SACCO), SMEPT, Jirani-Smart, merry go rounds, and locally organized table banking. A few of the respondents belonged to Communal Based Organizations (CBOs) which aimed at improving the livelihoods of the miners.

Regarding the market for mined products, the study shows that most women sell their minerals or products to unlicensed buyers (brokers), as it presented the larger share at 65 per cent; followed by licensed local buyers at 32 per cent and foreign markets took the remaining 3 per cent of the mined products (Figure 4). These results can be a clear suggestion of the exploitation of women's effort by the brokers who buy their mined products. Brokers take advantage of the ignorance of the women on market conditions including the prices in the market. The majority of the women interviewed have low levels of education which makes them susceptible to exploitation by the brokers. In addition, most are poor and therefore, would sell their products as fast, just to get the daily bread.

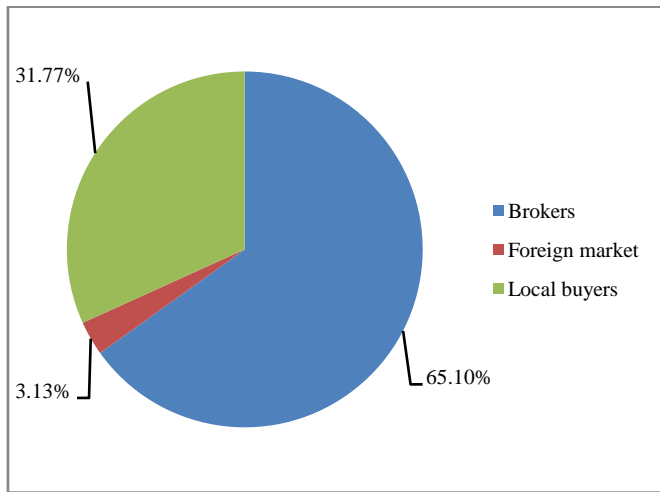


Figure 4: Main Market for the Ores

Source: Author (2020)

Next, we sought to establish various types of assets accessed by the respondents. From the results, 73.7 per cent of the respondents had access to Mineral deposits while 25.3 per cent were able to access land. In the human asset category, the majority of the respondents were able to access skills required for mining at 96.4 per cent while in the positive capital assets equipment technology was accessed by most women at 55 per cent. Concerning social capital assets, most women (72.6 %) could access formal association in the formal network while in the financial assets category, 47.2% of the respondents (majority) reported that they had access to savings in cash followed by credit access at 35.2 per cent. Finally, concerning physical capital assets, 62.1 per cent had access to roads and 26.8 per cent on the telephone.

The study also sought to establish constraints faced by women regarding their operations in ASM. The study has established poor education background was perceived as a constraint by 54.9 per cent of the respondents, corruption by 54.2 per cent, poor conveying of information (63.5 per cent), poor infrastructure (71.1 per cent). In addition, the majority of the respondents cited lack of finances at 68.8 per cent as a constraint while only 25 per cent and 31.3 per cent perceived lack of knowledge/skills and technology as constraints to accessing assets respectively (Table 1).

Table 1: Constraints in accessing assets

Parameter	A Constraint(percentage)	Not a constraint (percentage)
Poor education background	54.9	45.1
Corruption	54.2	45.8
Poor conveying of information	63.5	36.5
Poor infrastructure	71.1	28.9
Lack of finances	68.8	31.3
Lack of knowledge/skills	25.0	75.0
Technology	31.3	68.7

Source: Author(2020)

Furthermore, the study has established that market access was constrained by poor prices (60 per cent), Fluctuating prices (65.6 per cent) and Illegal trade (16.9 per cent). Similarly, access to services was hampered by poor infrastructure (71.3 per cent) and lack of extension services (54.4 per cent). We also find that 70.3% of the women reported that there is a gap concerning market information access. Concerning capital resource access, we report that most of the respondents (65.8%) had limited access to resources e.g. land rights and financial credit due to their cultural beliefs and other domestic responsibilities. Besides, 93.8 per cent indicated that lack of access to finance and credit was one of the leading reasons why women ASM miners were unable to obtain efficient technology and equipment and improve their ASM efficiency and hence, incomes.

In terms of training, 68% of the women consider being trained on how to identify good mines as the most important skills to improve their operations. Receiving training on proper operations of complex mining machinery was considered by 48.5 of the women as the second important skills they need to improve their operations. Besides, 38% of the women consider being trained on mining laws to be a better way of improving their daily operations, as it will reduce the conflicts and harassment they face from the law enforcers when they fail to comply with setting up standards and regulations. In terms of safety, 32 per cent of the women consider having better training on safety skills needed during mining as the most important training they need as women to improve their mining operations. Finally, 22 per cent of the women prefer being trained on value addition, as it will enable them to get better returns from their mines.

As evidenced in the Figure, more than half of the respondents (54.3 per cent) accessed money for mining business from mobile money. An additional 42.6 per cent got money from table banking, 37.1 per cent from family and friends, 8.1 per cent from affirmative funds such as youth and women funds, 5.6 per cent from SACCOs while 20.8 per cent got money for their businesses from other sources not enumerated in this study. Having presented summary statistics, the next sub-section presents correlation and regression analysis.

### 3.1.1 Correlation Analysis

Table 2 displays results of the correlation between the availability of financial access and women participation in ASM. The findings.

The results indicate that there is a negative correlation between the availability of capital variables and women participation in ASM. Both the variable on the source of finance and respondents' knowledge on finance have negative and statistically significant results. Though the coefficient of access to mining tools was negative, its findings are not statistically significant.

Table 2: Correlation between the availability of financial capital and women participation in ASM

		Women Participation in ASM	Source of finance	Knowledge on finance	Access to mining tools
Women Participation in ASM	Pearson Correlation	1	-.180*	-.220**	-.124
	Sig. (2-tailed)		.017	.006	.117
	N	146	146	146	146
Sources of finance	Pearson Correlation	-.180*	1	.048	.110
	Sig. (2-tailed)	.017		.547	.161
	N	146	146	146	146
Skills and knowledge of finance	Pearson Correlation	-.220**	.048	1	-.277**
	Sig. (2-tailed)	.006	.547		.000
	N	146	146	146	146
Access to mining tools/equipment	Pearson Correlation	-.124	.110	-.277**	1
	Sig. (2-tailed)	.117	.161	.000	
	N	146	146	146	146
*. Correlation is significant at the 0.05 level (2-tailed).					
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Author (2020)

3.1.2 Regression Analysis

The study conducted regression using OLS to determine the influence of access to finances on women participation in mining. Summary estimates are presented in Table 3.

According to the F-statistic (ANOVA test), the model was found statistically significant given the p-value of 0.001 <0.05. This means that the results are valid and that a significant relationship exists between the availability of financial capital and women participation in ASM. Concerning adjusted R squared, the results show that financial capital determines women participation in ASM by 9.5%.

Table 3: OLS Estimated Results

Independent variables	B	Std. Error	Beta	T	Sig.
(Constant)	14.635	1.706		8.580	.000
Sources of finance	-.770	.154	-.354	-4.983	.000
Skills and knowledge of finance	-1.106	.365	-.247	-3.032	.003
Access to mining tools/equipment	-2.162	.771	-.230	-2.803	.006
Dependent	Women Participation in ASM				
Adj. R squared	0.095				
Std. Error	2.134				
F – ratio (3, 149)	6.229				
Prob. > F	0.001				

Source: Author (2020)

The study had established that capital availability, in general, has a negative relationship with women participation in ASM. The results indicate that sources of finance influence women participation in ASM (-.770, Sig.=0.000). These results can be attributed to the fact that the respondent (women) have limited access to resources, and therefore, little access to financial resources. These results are supported by UN report (2014) which observes that control over resources like land and other resources acts as a hindrance to women’s full participation in the extractive industry. The report further states that even in the case where women own concessions, they do not have equal rights with men when it comes to earnings. A similar argument was advanced by Rickard et al.(2017) who reported that the majority of women do not have control over resources such as land, finances and even getting a practising licence is quite difficult for most of them.

With regard to skills and knowledge of financial matters, the study has found a negative and statistically significant relationship between skills/knowledge of the women and women participation in ASM (-.247, Sig.=0.003). In fact, the size of the coefficient indicates that a unit change in skills/knowledge on finance reduces participation of women in ASM by 24.7 per cent. The results could be attributed to the argument that the majority of the women are illiterate and have limited knowledge and skills in finance issue. They, therefore, have poor financial management skills and hence, an inability to control resources that can help them enhance their ASM.

Similarly, the study has found a negative relationship between access to mining tools/equipment and women participation in ASM (-.230, Sig.=0.006). This implies that accessibility to mining equipment has an adverse effect on women participation in ASM. This can be attributed to the inability of women to access tools and equipment for mining due to their meagre resources.

#### IV. CONCLUSION AND POLICY RECOMMENDATIONS

We examined the effect of financial capital access on women participation in ASM sector in Taita Taveta county. The study has established that the availability of financial capital (sources of finance, skills and knowledge in finance) has a negative effect on women participation in ASM. This could be attributed to the fact that most women have no access to financial resources such as land which could act as collateral for loans. It is worth noting that the majority of the women engage in ASM business as employees due to lack of enough capital to participate in ASM as the owner (traders or owner of the mines) and even some of them play low-level roles with minimal earnings due to the same reason. Some women have insufficient finance to buy modern tools and equipment necessary to enhance their operations in the mines. Furthermore, with sufficient financial resources, it becomes difficult for the women to formalize their engagement in ASM through the registration and acquisition of relevant licenses.

Based on these results, we recommend the collaboration between the government (both national and County), civil society organizations, finance providers and other relevant stakeholders to increase women's access to credit by promoting micro-credit for financial support to women. Access to credit can enhance women's ability to pay for mining licenses and purchase better mining equipment. Mechanisms to reduce financial vulnerability by facilitating collective savings for women working in the ASM sector are critical.

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