



**EFFECT OF ACCESS TO CAPITAL ON PERFORMANCE OF COMMUNITY BASED FISH FARMING PROJECT IN THE COUNTY OF KAKAMEGA; KENYA**

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<sup>1</sup> Nyamwata, E., & <sup>2</sup> Mukanzi, C.

<sup>1</sup>Master Student, Jomo Kenyatta University of Agriculture and Technology [JKUAT], Kenya

<sup>2</sup> Doctor, Lecturer, Jomo Kenyatta University of Agriculture and Technology [JKUAT], Kenya

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**ABSTRACT**

*Fish farming has played a major role in employment, economic development of the nation, provision of a nutritious meal for the people and earnings from foreign currency through exports. Many farmers are quickly taking up fish farming as a means of earning extra income for the family. However, despite the government's effort to promote aquaculture, the projects did not perform as expected; the freshwater aquaculture sub-sector registered a depressed performance. The study therefore examined the effect of Access to Capital on Performance of the Community based Fish Farming Projects in the County of Kakamega; Kenya. A descriptive survey research design was used. The target population was obtained from farmers owning fish bonds in the county of Kakamega; Kenya. Taro Yamane's Proportion Sampling Technique formula was used to determine the sample size. Descriptive and Inferential statistics of the data obtained was analyzed by the use of Statistical Package of Social Sciences (SPSS). The study's overall finding was; Access to Capital had a significant positive correlation on Performance of Community based fish farming projects in the County of Kakamega; Kenya. The study embraced and recommended for farmers to be supported or find ways to have Access to Capital since it improves performance of fish farming projects. Further researching on similar variables using different methods was encouraged by the study.*

**Key words:** Access to Capital, Performance

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## INTRODUCTION

Performance of community-based projects are regarded as strong forces for social and political change that fill the gaps between those who have and those who don't have in the community and are the much needed vehicle which the poor and marginalized members of society will use in order to attain financial independence and social inclusion. Therefore, community-based projects seek to empower local community groups and institution by giving the community direct control over investment decisions, project planning, execution and monitoring which is realized through a process that emphasizes inclusive participation, management and implementation of the projects (Cheruiyot, 2016).

Aquaculture includes the proliferation and raising of amphibian species in a controlled domain are characterized by the National Aquaculture Act of 1980 (Allison, 2011). Fish farming is among the most seasoned monetary occupations that humanity has been associated with and is done for subsistence and business purposes. As indicated by (Bunting, 2013), worldwide fish creation keeps on exceeding total populace development and aquaculture is a quickly developing nourishment generation framework universally, with about 8.8% expansion every year since 1985. In developed nations it is exceptionally marketed while in developing nations it is mostly completed for subsistence purposes, this is on the grounds that about 66% of the labourers in sub-Saharan Africa are centred on sustenance farming. Nonetheless, the greater part of these individuals is small scale farmers who lack access to capital and stable markets for their produce, catching them in a ceaseless cycle of destitution. Because of poverty and a lack of accessible nutritious food, a quarter of the region's population is also undernourished (Bunting, 2013).

The worldwide returns for fish farming recorded by the FAO in 2008 totalled 33.8 million tons of about \$US 60 billion Globally, the most well-known fish species in fish farming are tilapia, carp, salmon, and catfish. Over each subset of aquaculture, China is by

far the biggest producer, giving about 62% of the world's cultivated fish, trailed by Japan, India, Norway, and Vietnam. As of 2016, more than 50% of seafood was produced by aquaculture. Demand continues expanding for fish and fish protein, bringing about overfishing in wild fisheries. Farming carnivorous fish, such as salmon, does not always reduce pressure on wild fisheries since carnivorous farmed fish are usually fed fishmeal and fish oil extracted from wild forage. It is anticipated that by 2030, fish Farming will give nearly 66% of worldwide fish utilization as the catch from wild catch fisheries level off and demand from developing worldwide middle class, particularly in China substantially increase (Maliao, Pomeroy & Turingan, 2019).

In Kenya, aquaculture has indicated development since 2009 when the government supported the Economic Stimulus Program (ESP) that prompted increment in fish farming. The ESP which is facilitated by the Ministry of Fisheries Development was presented through the 2009/2010 spending plan to programs to help find the best practices for pond culture and an intensive training program for fisheries extension workers, there has been a renewed interest in fish farming in Kenya. Farmers in the County practice smallholder farming and the family is the wellspring of work in the farming creation frameworks. Farming assumes a key occupation in nourishment, business openings and destitution decrease in the nation. The standard diet crops delivered are oats including sugar cane, maize, millet and sorghum, different harvests developed for subsistence incorporate green grams, beans, cowpeas, and pigeon peas; root crops incorporate yams and sweet potatoes. The farmers depend on rainfall for the most part of their farming activities, which has frustrated numerous farmers because of problematic precipitation described by delayed dry spell promoting crop disappointment. This has made it important for elective methods for occupation, similar to fish farming, domesticated animals raising, beekeeping (apiculture) and poultry cultivating.

### Statement of the Problem

Fish farming has played a major role in employment, economic development of the nation, provision of a nutritious meal for the people and earnings from foreign currency through exports. Many farmers are quickly taking up fish farming as a means of earning extra income for the family. However, despite the government's effort to promote aquaculture, the projects did not perform as expected, the freshwater aquaculture sub-sector registered a depressed performance. Besides, not all fishponds constructed were stocked with tilapia fingerlings. The beneficiaries of the project had the responsibility to purchase and install the polythene pond liners. Some of the farmers were not able to meet these requirements by the time the ESP program funding came to close (Musyoka & Mutia, 2016). There are many cases where farmers eventually abandoned their ponds even before the first harvest. Munguti., Kim and Ogello (2014) found that most farmers who are still holding on to the venture are yet to realize their returns due to challenges they are faced with. This has affected the sustainability of fish farming in the county thereby reducing employment opportunities as well as income within fish value chain due to low productivity. This has resulted to persistent food insecurity among the rural communities. The residents of Kakamega County have high rates of malnutrition due to food insecurity and yet Kakamega County has the largest number of community-based project in fish farming.

Therefore, this brings out some urgent need for continued research on the factors likely to be responsible for determining the performance of community based projects across the county. Extent studies have indicated various factors affect performance of community projects. For instance, Cheruiyot (2016) found that community-based water project performance is affected by financing and technical capacity. Matthews-Njoku, Angba and Nwakwasi (2019) indicated that socio-cultural factors do not influence performance of performance of community-based organization's in agricultural development. It is against this

backdrop that this study was conducted to determine the effect of Access to Capital on performance of community-based fish farming projects in Kakamega County; Kenya.

### Objective of the Study

The objective of the study was to determine whether access to capital affect the performance of community based fish farming projects. The study was guided by the following research hypothesis;

- $H_0$ : Access to capital does not significantly determine the performance of community-based fish farming projects.

### LITERATURE REVIEW

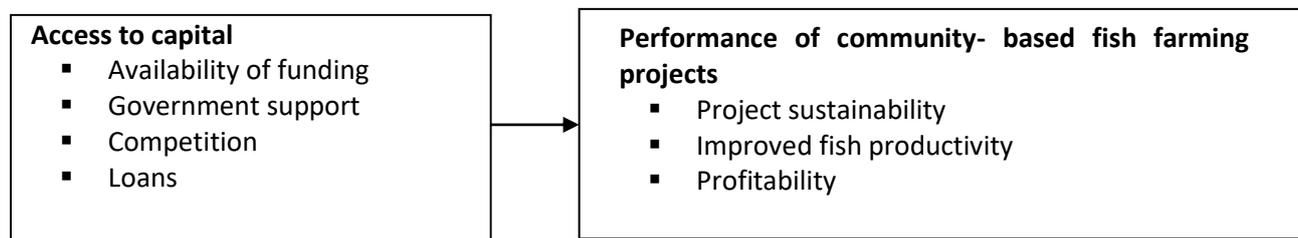
**Resource Dependence Theory (RDT):** Created by Pfeffer and Salancik, (1978) the Resource Dependence Theory (RDT) depends on what outer assets of associations mean for the conduct of the association. The hypothesis depends on the accompanying precepts: Organizations are subject to assets, these assets at last start from the climate of associations, the climate to an impressive degree contains different associations, the assets one association needs are consequently

**Systems Theory:** Bertalanffy, (1962) fostered the Systems hypothesis as a hypothesis of crisis - activities and results at the aggregate level rise out of the activities and associations of the people that make up the system. He further called attention to that the frameworks hypothesis of administration gives a logical structure to review an association overall through collaboration and reliance. Whitchurch and Constantine (2009) additionally sees that all associations comprise of preparing information sources and yields with interior and outer frameworks and subsystems which help give a utilitarian outline of any association.

**Stakeholder Theory:** Stakeholder's theory (Freeman, 1984) argues that in addition to the shareholders, project organization is accountable to a broader range of stakeholders, and the structure of the organization should also be aligned with this broader inclusion of stakeholders. This in fact stems

from the normative formulation of stakeholder theory that considers a moral right for all of the

stakeholders of the organization (Donaldson & Preston, 1995).



**Independent Variable**

**Dependent Variable**

**Figure 1: Conceptual Framework**

**Source: Author**

### Review of the Variable

Balint and Mashinya (2016) argues that most of the community-based projects heavily rely on donor funding as the only source of funds and this leads to a sudden collapse of the programs or organizations when the donor support is withdrawn. Gyamfi (2010) stated that in a situation where a greater proportion of an organization funding comes from external sources it will affect the long run in case of withdrawal of external funding. This means that any organization that depends solemnly on external funding will not be in a position to finance some of its initiated projects. According to Muriithi (2014) non-profits serving low-income communities have an even harder task as they often struggle to raise funds, as few community members have the means to contribute financial support to community Projects.

Most developing economies including Kenya are characterized by consistent low per capita income. There is also low saving and very few aspiring entrepreneurs in this economy. Owing to its prominence the Kenyan government in the 2009/2010 financial year under the ESP introduced commercial fish farming in Kenya in 140 constituencies. Each constituency benefited with funds for 200 fish ponds, 15 kilograms of fertilizer and 1000 fingerlings. Mwamuye, Cherutich and Nyamu (2012) observed that in Kenya the government support towards aquaculture extension services was inadequate and mostly led to poor

performance at all levels from pond preparation, stocking, harvesting to marketing. Ngwili (2014) had observed similar causes of the poor performance of aquaculture in Kenya. However, the two studies did not indicate the significance level of the influence of funding level on the performance of aquaculture in Kenya. It is estimated that above 37% of small farming ventures in rural and urban centres in Kenya fail to grow and many times collapse primarily due to lack of grants or credit facilities. For these reasons, it is imperative to set up mechanisms for enabling small farming ventures to attain necessary funding to enhance the economy (Chebet,2019). The availability of funds for fish farmers could consequently improve access to other resources. Low levels of funding translate to low technological support within the industry which hinders an adequate amount of production of fish, subsequently leading to sales and profits decline.

Swanson and Raja Lahti, (2010) states that one of the serious issues of most local area based tasks and non-benefit expansion frameworks is the inaccessibility or deficiency of monetary assets to keep a practical framework, let alone to change these organizations into giving fundamental augmentation administrations to the provincial poor. As per Wachira (2018) the primary test is that numerous local area projects depend a lot on outer wellsprings of financing, for example, government concedes that have been scaled back as of late. Benefactor offices consistently rule as they are

giving assets so they settle on choices about formative undertakings.

The small fish farming projects in Kenya fall precisely in a perfectly competitive market structure. The prices are solemnly determined by the forces of supply and demand which means that all sellers conform to an analogous price level margin. The suppliers simply settle for the price at which the commodity or service is already being offered in the industry. Any farmer that is aggressive enough to increase the price is likely to lose market share because the buyer can freely and comfortably switch to the competitor (Kawarazuka & Béné, 2010). The decreasing fish stocks in rivers and oceans across the world due to global warming and environmental pollution have severely affected fish supplies. As supply is unable to keep pace with the demand of an exploding African population, fish has continued to attract higher prices in our markets. According to FAO, fish farming currently accounts for more than 30 per cent of global fish supply; of which Africa as a whole contributes less than 2 per cent. However, looking at the fishing communities, they have remained poor although they are involved in an important trade (Locke, Muljono, McDougall & Morgan, 2017). Markets are non-competitive and therefore, there is high exploitation of fish farmers in terms of prices.

## METHODOLOGY

Descriptive survey design explored study factors, for example, economic factors, skills, and knowledge of group leaders, socio-cultural factors and technological innovation determine fish farming projects in Kakamega County. The study considered farmers whose fishponds are still functional and those who have abandoned their fishponds. This study targeted all 404 documented fish farmers, both small and large scale, spread across Kakamega County (Department of fisheries report 2018). The study also targeted 6 ward fishery extension officers and 10 sub-county fisheries officers totalling to 420 targeted populations. Data

was coded in SPSS version 20 and analyzed using descriptive and inferential statistics. In descriptive analysis, the study used charts, tables and bar graphs to present respondent general information. Inferential statistics was done Pearson correlation coefficient to find out whether there is correlation between Access to Capital and performance of community based project. Linear regression model was used to find out the relationship between the independent variable and the dependent variable. The following linear regression was used:

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where:

Y = Performance of Sugar companies

$\beta_0$  = Y intercept (constant) whose influence on the model is insignificant

$X_1$  = Access to Capital

$\beta_1$ , = Model coefficient which is significantly large to have significant influence on the model and  $\epsilon$  is the error term.

## FINDINGS AND DISCUSSIONS

A total of 205 questionnaires were dispatched in the field for data collection and 156 questionnaires were returned fully filled, depicting a response rate of 76.1% which is good for generalizability of the research findings to a wider population. Richard (2015) recommended that at least 70% of response rate to be both desirable and achievable. The response rate of 76.1% which was attained during this study is acceptable because it is above the 60%. Reliability of research instruments was tested using Cronbach alpha; which tests internal consistency and the results in Table 1 shows Cronbach alpha coefficients values of 0.7 and above confirming that reliability of the study's research instruments. Validity of research instruments was checked using content validity where all questions were checked for clarity of words and contents so as to fully capture all aspects of the conceptualized study variables.

**Table 1: Results of Reliability test**

Variables	Cronbach Alpha	No. of Items
Access to capital	0.736	5
Performance of community-based fish farming projects	0.849	5

**Analysis of Descriptive Data****Access to capital and Performance of community based fish farming projects**

Capital is need for pond construction, purchase of liners, purchase of feeds, purchase of fingerlings, pumping water, personnel for pond management, fencing round and purchase of fishing nets. From table 4.3, few of the respondents strongly agreed (11.4%) and strongly agreed (48.9%) that government provides financial support to fish farmers and further 22.7% were partially agreed on the same. A mean of 3.466 postulated that respondents partially agreed that government provide financial support to fish farmers. More so, 13.6% and 42.0% of respondents strongly agreed and agreed respectively that the county government provide venture capital finance to farmers while 23.9% partially agreed. A mean of 3.432 implied that the county government partially provides venture capital finance to farmers.

Further, slight majority of the respondents agreed (26.1%) that fish farming receives finances from investor, 28.4% strongly agreed and additional 29.5% partially agreed on the same. A mean of 3.614 revealed that respondents agreed that fish farming receives finances from investor. More so, 56.8% and 19.3% of the sampled respondents agreed and strongly that fish farmers receives loans/equity from family or friends. A mean of

3.830 suggested that fish farmers received loans/equity from family or friends

Lastly, 21.6% of the respondents strongly agreed that fish farmers receive loans/equity from business partners and further supported by 39.8% of the respondents who agreed while 23.9% of them partially agreed. A mean of 3.66 indicated that respondents agreed that fish farmers receive loans/equity from business partners.

A study by Ogello, also pointed out that “despite enormous resources and great potential, the integrated livestock-fish farming has failed to take off due to financial challenges. According to Andayi (2018) a large number of the fish ponds in the constituency were started during the initiation of the Economic Stimulus Programme (ESP) of 2011 which was meant to stimulate economic development countrywide, provide employment and job opportunities for the masses and also address food security.

**Inferential statistics;****Pearson Correlation Results**

The correlation coefficient (r) results are presented as shown in Table 2 using Pearson correlation analysis, which computes the direction (Positive/negative) and the strength (Ranges from - 1 to +1) of the relationship between two continues or ratio/scale variables.

**Table 2: Multiple Correlation Matrix**

		AC	FC	CP	PT
Access to Capital	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	156			
Performance	Pearson Correlation	.497**	.457**	.505**	.400**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	156	156	156	156

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From the correlation Table 2, access to capital is positively correlated to performance of community-based fish farming projects, the coefficient is 0.497 (p value < 0.01) this is significant at 99% confidence level. Thus increase in access to capital would make performance of community-based fish farming projects to increase in same direction. These findings are in agreement with Singas and Manus (2014) who found out that access to capital significantly influence performance of fish farming. The study indicated that it is difficult for farmers to adopt aquaculture if they don't have access to funds to maintain their ponds and buy feeds.

### Linear Regression Analysis

This tested the direct influence of independent

variables (access to capital). This was computed by SPSS version 23 by first transforming categorical data into continuous data so as to validly run linear regression analysis.

### Linear influence of access to capital on performance of community-based fish farming projects

Simple linear regression analysis was conducted to establish the relationship between Access to capital and performance of community-based fish farming projects in Kakamega County. The results are as shown in Table 3. In the simple regression analysis, beta ( $\beta$ ), this is equivalent to the Karl Pearson correlation coefficient ( $r$ ) (Sekaran, 2003) was used to measure the relationship.

**Table 3: Regression Results of Access to capital on Performance of community-based fish farming projects in Kakamega County**

Model	R	R Square	Adjusted R Square	Model Summary					
				Std. Error of Estimate	R Sq Change	F Change	df 1	df 2	Sig. F Change
1	.497 <sup>a</sup>	.247	.242	.7387	.247	50.417	1	154	.000
a. Predictors: (Constant), access to capital									
ANOVA <sup>a</sup>									
Model	Sum of Squares		Df	Mean Square	F	Sig.			
1	Regression	27.513	1	27.513	50.417	.000 <sup>b</sup>			
	Residual	84.037	154	.546					
	Total	111.550	155						
a. Dependent Variable: Performance of community-based fish farming projects									
b. Predictors: (Constant), access to capital									
Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients		T	Sig.		
		B	Std. Error	Beta					
1	(Constant)	.952	.343			2.777	.006		
	Access to capital	.641	.090	.497		7.101	.000		
a. Dependent Variable: Performance of community-based fish farming projects									

The results illustrated that there was a statistically significant positive relationship between access to capital and performance of community-based fish farming projects in Kakamega County. Access to capital accounted for 24.7% ( $R^2 = 0.247$ ) variations in the performance of community-based fish farming projects in Kakamega County. Therefore, access to capital is a significant predictor of

performance of community-based fish farming projects in Kakamega County.

Results also showed that access to capital had a positive, linear and significant (p-value is less than 0.05) relationship with the performance of community-based fish farming projects in Kakamega County {regression coefficient,  $B=0.641$ ,

ANOVA,  $F=50.417$  and  $t$ -test value,  $t=7.101$ }. The results are represented in the following model:

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where  $Y$  = performance of community- based fish farming projects,

$$\beta_0 = 0.952 \text{ (constant)}$$

$$\beta_1 = 0.641$$

$$X_1 = \text{Access to capital}$$

Replacing in the equation above, the model becomes:  $Y = 0.952 + 0.641 X_1$

From the above equation, the constant had coefficient of 0.952,  $p=0.000$ , this implies that in the absence of access to capital, performance of community- based fish farming projects will be at 0.952. This performance will be significant ( $P < 0.05$ ). On the other hand, access to capital had beta coefficient of 0.641. This implies when everything is held constant, one percent increase in the access to capital would result to a significant increase in performance of community- based fish farming projects by 64.1%. These results are in agreement with Gatonye and Gakuu (2018) who indicated that access to capital influence performance of fish farming. The results were in agreement with (Brummet & Rana, 2010) who found out that 50% or more of the operational costs were on feeds and fingerlings. The findings concur with those of Sarnissa (2011) who found out that affordable and accessible inputs such as fish seed (fingerlings) and feed are the main components for successful aquaculture farms and projects.

### Hypothesis testing

First, study hypothesis one ( $H_0$ ) stated that access

to capital does not significantly determine the performance of community-based fish farming projects. Multiple regression results indicate that access to capital practice significantly determined performance of community- based fish farming projects in Kakamega County ( $\beta = 0.326$  at  $p < 0.01$ ). Hypothesis one was therefore rejected. The results indicated that one percent improvement in access to capital will lead to 32.6% improvement in performance of community- based fish farming projects in Kakamega County.

### CONCLUSIONS AND RECOMMENDATIONS

This tested the hypothesis of the study; access to capital does not significantly determine the performance of community-based fish farming projects. Descriptive analysis majority of the respondents were in agreement that fish farming received loans/equity from family or friends as well as fish farmers receive loans/equity from business partners. Investors were also source of finance for fish farmers. However, both county and national government were not common source of finance for fish farming in Kakamega County. Inferential analysis revealed access to capital has significant influence on performance of community- based fish farming projects in county government of Kakamega, Kenya. This implied that increase in access to capital would result to improvement in performance of community- based fish farming projects. These findings were supported by various empirical studies on the relationship between access to capital and performance of community-based fish farming projects.

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