

# Original Research Article

## **Impact Government Finance through Commercial Banks on Seaweed Production in Zanzibar**

### **ABSTRACT**

This study assesses the impact of government finance through commercial banks on seaweed production in Zanzibar. The study aims to help seaweed producers as well as the blue economy by providing different financing through commercial banks. Using a questionnaire for collecting primary data, the study applied quantitative data analysis. The quantitative method was in the form of descriptive statistics using frequency distribution. The findings of the study showed that the finance provided by the government through commercial banks to seaweed producers in Zanzibar, such as loans, hire purchase, etc., however, many of the respondents were not benefiting from the finance, and only a few of them were receiving loans as financing. The findings show that those receiving finance from commercial banks, most of them received loans, and on the impact of the finance they receive, it was of no interest and can be used to buy input and output materials such as rope, seeds, tools, and equipment, branding material, and packaging materials. However, the findings of the study show that the conditions required by commercial banks for seaweed producers were to be in a cluster rather than individual and number of years in the seaweed industry, income generated per month, quantity of production. Also, on the finance control that is provided by commercial banks, education was given. Therefore, according to the findings of this study, many seaweed producers are not benefiting with government finance through commercial banks despite the follow-up made, and others are not aware of the services if they are available.

**Keywords: Finance, seaweed production, commercial banks**

### **1. INTRODUCTION**

Seaweed production is the way of cultivating and harvesting seaweed. In its simple form, it includes the management of naturally found batches. In its most advanced form, it consists of fully controlling the life cycle of the algae. The demand on seaweed necessitates the growth of alternate resources to produce important commodities such as food, feed, cosmetics, and pharmaceuticals increase. The development of large-scale seaweed aquaculture in Europe has the potential to play an important role in meeting future resource needs, but must do so in a manner that does not require the use and value of existing marine resources.

Large-scale cultivation of seaweeds has been practiced in Asia for decades (Cheng, 1969), but has only recently been a commercial activity in Europe (FAO, 2014; Bostock et al., 2016). High demand has driven a rapid expansion in Asia in this form of aquaculture. Global production has increased at a rate of 7.6% year between 2004 and 2015 when an estimated 28.1 million tons were produced (FAO, 2015).

According to Sea Green, there are sources of financing and credit arrangements available at the national, regional, and international level for aquaculture development programmes and investments into commercial production.

National financing institutions including commercial banks exist in all countries to foster agricultural, industrial, and general economic development, and it is expected that funds required

for investments in aquaculture production programmers would also be forthcoming from this source

In Kenya, in the year 2016 seaweed farmers in Kibuyuni were encouraged to manufacture seaweed soap, with training in the production of seaweed soap, body cream and foods such as jam, juice and salad (Msuya 2016-unpubl.). FAO also trained the farmers on best business management practices, such as agronomy, harvesting, handling and marketing (Msuya 2015-unpubl.; 2016-unpubl.). The seaweed farmers' group also worked, with the Kenyan Industrial Research and Development Institute and other agencies, to develop various other cosmetic and food products, minimise post-harvest losses and introduce other aspects of best management practices (Nyonje et al. 2017-unpubl.). With the growing interest in seaweed farming from a range of stakeholders and with the socio-economic benefits for the local communities having been demonstrated (Mirera et al. 2020; Odhiambo et al. 2020), the government of Kenya identified this industry as one of the priority interventions under the Blue Economy Initiative (Blue Economy Committee Report 2016-unpubl.).

In Tanzania, Approximately 428 seaweed species of Rhodophyta, Chlorophyta and Phaeophyceae have been recorded (Msuya 2020). Amongst these, only a relatively small number of species are used for commercial cultivation, including the red seaweeds *Eucheuma* and *Kappaphycus* which are farmed in Tanzania among other countries, contain the phycocolloid carrageenan that is extracted and used in such industries. Three species of *Eucheuma* are found growing naturally in Tanzania, *E.denticulatum* (commercial name 'Spinsum'), *E. Platycladum* and *E. okamurai*, and one species of *Kappaphycus*, *K. striatus* (commercial name 'Cottonii') (Mshigeni and Jahn 1995; Msuya 2020).

The Tanzanian seaweed industry employs about 30,000-36,000 of which 25,000 in Zanzibar and 5,000-6,000 in Tanzania most of whom are women who contribute significantly to the country Economic especially of the Island of Zanzibar according to 2011 statistics.

Seaweed production in Tanzania has increased rapidly since the start of the industry in 1989, particularly in Zanzibar, which is comprised of two islands, Pemba and Unguja. Production increased from 8080 t in 1989 to the 107,000 t in 2015, with a maximum production of 176,000 t recorded in 2016. Since 2016, however, production of *Kappaphycus* has declined significantly as a result of disease, such as ice-ice disease syndrome, and epiphyte outbreaks that have been exacerbated by increasing surface seawater temperatures linked to climate change (Msuya and Porter 2014; Largo et al. 2020).

The main technique of farming seaweeds in Tanzania is the off-bottom (peg and line), which is typically used in shallow waters (< 1 m at low tides). In this technique, seaweed seedlings of about 100–200 g are tied to nylon ropes (lines) using thinner ropes of the same material, known as "tie-tie". The main lines are then stretched between two wooden pegs, which are secured firmly into the seabed. The lengths of the lines vary depending on the site (e.g. whether the region is subjected to strong waves) or the physical strength of the farmer, in that male farmers typically use longer lines compared with the female farmers. The distance between the seedlings is approximately 20–30 cm. This technique is "easy to use", as it allows the farmers to work during the period of low tide (Msuya 2011b).

However, the government, private sector and other stakeholders have conducted training programmes in recent years, to inform farmers about how to manage their farms, particularly in relation to minimising the risk of pest and disease outbreaks (Rusekwa et al. 2020).

Seaweed species that are farmed in Zanzibar are *Eucheuma denticulatum* and *Kappaphycus alvarezii*. The current annual production is 4, 000 tons dry weight from approximately 500 ha,

which is much less than other areas such as Chile where the production is 74, 000 – 322, 000 tons per year for red and brown seaweeds (Buschmann et al., 2001). More than 25, 000 people are involved in seaweed farming on the Zanzibar Islands .

The seaweed farming industry contributes significantly to the economy of Zanzibar. For example, in 1993 seaweed farming contributed 14.7 % of Zanzibar exports, where as in 1994, it contributed 27.3 % (Msuya et al., 1996).

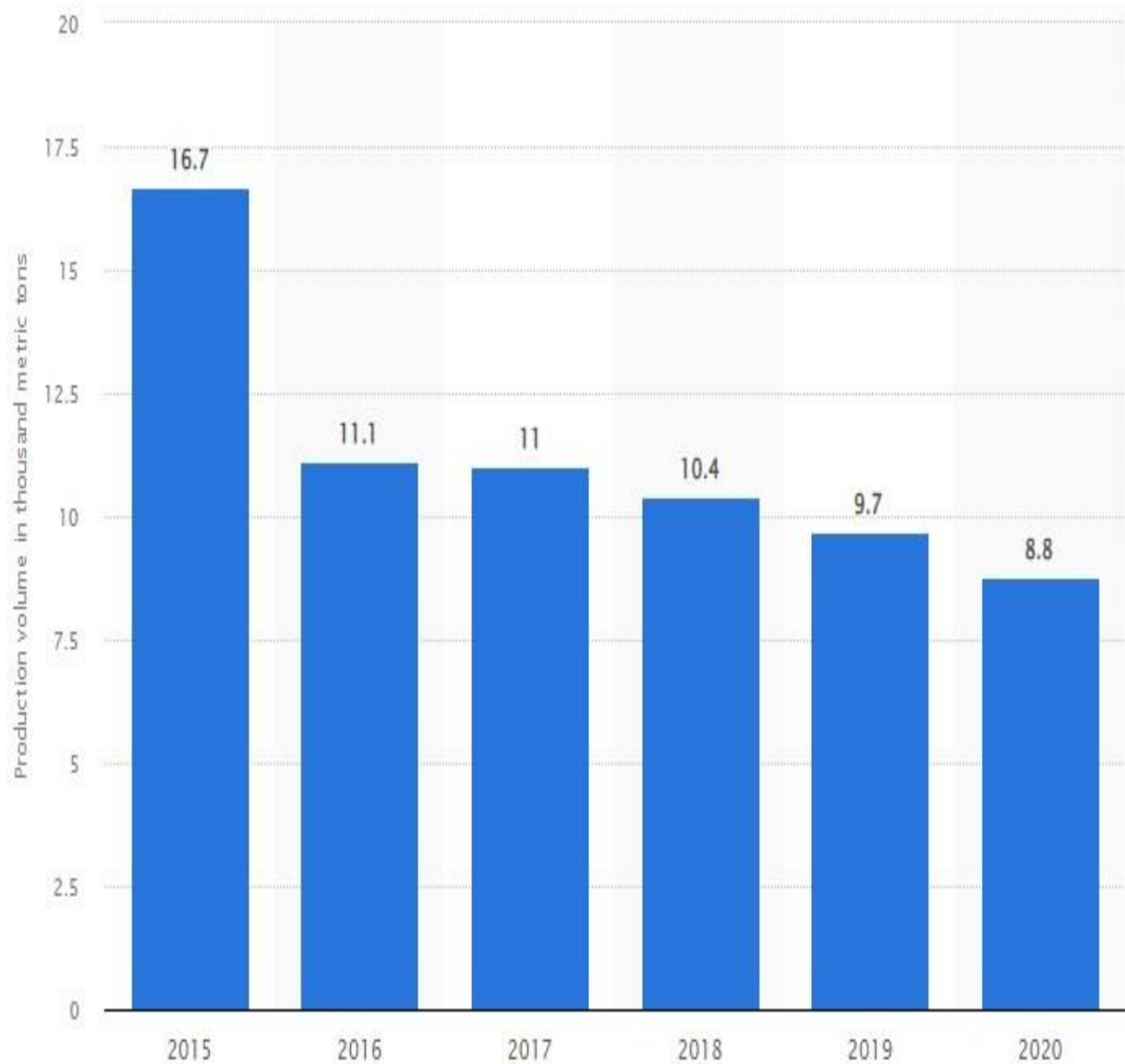
Seaweed cultivation involves tying seedlings onto 3-5 m long nylon ropes using thin nylon stripes called “tie-ties”. The ropes are then tied to wooden pegs previously fixed in the sand. Seaweed has to be submerged at low tides to avoid overexposure to the sun and rainwater that could lead to stress related diseases and bleaching. Long line or floating method is also used especially on Pemba Island and on mainland Tanzania (Msuya, 1996). The use of floating rafts was also proposed as a feasible method of farming seaweed in Tanzania (Mshigeni, 1976; Msuya, 1996).

The government of Zanzibar, however, has recognised the added- value of processing the raw materials in the country and is supporting the development of an indigenous seaweed processing industry to produce its own supply of carrageenan’s for internal use and export. This effort is one of the outcomes from several governmental and ministerial committees that were tasked to advise the government of Zanzibar on how it could advance its seaweed industry. Also financial institution (Commercial Banks) in Zanzibar need to support the seaweed industry together with the help of the Revolutionary Government of Zanzibar to provide financial support to seaweed producers in order to develop the seaweed industry to another level. However generally in Tanzania there are 48 licence Banks where 36 are Commercial Banks (BOT, 2022). The Commercial Banks however has many function some of which are reduce risk through coverage, diversification, and commerce, reduce the cost of compiling the information needed to enforce contract, compile information and allocation of the resources by reducing information asymmetry between lenders and borrowers.

But recently The Government of Zanzibar through ZIPA (Zanzibar Investment Promotion Authority) and ZAFREZA (Zanzibar Free Zone Economic Zone Authority) has liberate the economy and new Conducive business environment and lucrative opportunities that have ensure and necessitate the creation of specific state organs to promote, handle and oversee investment on seaweed. In order to ensure the business environment for seaweed between farmers, investors and buyer TBS (Tanzania Bureau Of Standard) has provide a guideline to stakeholder and investors on the requirement of quality and Grade of Seaweed which are in

Production volume of seaweed in Zanzibar from 2015 to 2020

According to Julia Faria; the production of seaweed in Zanzibar decreased to 8.8 thousand metric tons in 2020, keeping a downward trend. In the previous year, the semi-autonomous region of Tanzania produced 10.4 thousand metric tons of the crop. Seaweed farming is an important activity in the Tanzanian archipelago, being a key player in the region's exports. However, the production level has been decreasing in recent years, mainly due to increasing ocean temperatures.



**Fig.1. Seaweed cultivation from 2015 to 2020**

### **1.1 Statement of the Problem**

Seaweed farming, is an important economic activity in both Unguja and Pemba Islands (Msuya, 2006), (Wallevik and Jeddawi, 2011). Seaweed farming, has helped to improve the economic conditions of farmers most of them women (Msuya, 2007). In addition, participation of households in seaweed farming has been seen to elevate their status in their villages, create employment opportunities and decrease rural urban migration (Wallevik and Jiddawi, 2011). Despite its contribution to community livelihood, the practice faces a number of challenges such as small farm sizes, strong winds, lack of transparency in the pricing structure poor quality, low

production volume, lack of sufficient fund, poor marketing and world market preference for one seaweed species. However according to the organization fisheries advisors “Farmers in Zanzibar Community will receive a comprehensive training so that they can increase the quality and quantity of their production yield, better site designation, market identification and financial literacy training such as where to have an access of different source of funds, how to utilize the availability of source of funds. Also different Government unit and stake holders together with Commercial Banks, are trying to help seaweed farmers by providing possible alternatives and strategies to the seaweed farming business like financing support, means to increase the quality and quantity of the seaweed being produced. One such alternative is through providing financial support, financial controlling techniques, innovation that adds value to seaweed that is being produced. However in Zanzibar there is tremendous efforts have been made by the government, like allowing free trade within the seaweed industry on the island (Msuya, 2012). Also, research institutes and NGO’s have been making innovations to increase seaweed production where such innovation requires huge financial support.

Therefore due to the lacking of many studies regarding Government Financing through Commercial Banks that support seaweed production in increasing and improving the seaweed being produced, the aim of this study is to fill in the Gap on the understanding on how the Government Finance through Commercial Banks can assist in helping seaweed production in Zanzibar through examining the theoretical and empirical evidence on the assessment of Impact of Government Finance through Commercial on seaweed production. Zanzibar will be used as the Case study and being one among the unique study to be conducted in Zanzibar.

## **2. LITERATURE REVIEW**

This part discussed the theories and empirical review that support the study of Government Financing through Commercial Banks to Seaweed Producers. Transformation Theory and Aquaculture 4.0: New Era of Seaweed Cultivation are used in this study. Empirical studies used are as follows;

Georgia de Jong Cleyndert (2021): Adaptation of Seaweed Farmers in Zanzibar to the Impacts of Climate Change Seaweed The result of the study shows that due to the climate it affect the productivity of the seaweed such as increase in temperature and affect the quality of the seaweed being produced.

Anes Dwi Jayanti (2020), Technical and Economic Aspects to Increase the Income of Seaweed Farmers The result of this study shows that due the lack of improper production facilities, falling in price, low capital leads to the low income of the seaweed famers, therefore in-order to increase the income of the seaweed farmers there is an important for the farmers to have an assistance in financial support.

Hari Wahyono, Januar Kustiandi, Tri Wahyu Hardaningrum (2018), Welfare Meaning and Its Influence on Business and Finance Management of Seaweed Farmers The result of the study aims to examine in depth the variation of subjectivity in interpretation welfare and how it affects the strategy and business and financial management processes seaweed farmers

Flower E. Msuya & Anicia Q. Hurtado (2017) the role of women in seaweed aquaculture in the western Indian Ocean and South East Asia. This result of this study shows that many women who participate in seaweed farming improve their financial skills or financial management for

more secure livelihood which in return ensure the increase in productivity through improving in marketing access.

B. A. Songwe1, S. M. Khamis, M. H. Khalfan, and F. E. Msuya (2016), Commercial Seaweed Farming in Zanzibar Coastal Villages: Potential for Innovative and Competitive Economic Growth” The result of this study shows that due to lack of financial support farmers are unable to improving the crop commercial aspect, poor economic return, low level of value addition initiatives on seaweed farming

Moh’d Said Seif (2015), The Impact of Seaweed Farming on Household Income. The result of this study shows that seaweed farmers despite requiring to have support in finance but however they need other support like education this leads to the improvement of seaweed being produced (quality).

Riziki Said Seif (2013), The Influence of Price on Seaweed Farming Growth. This study show that many farmers are facing many challenges such as disease, increase I investment for tourist, lack of basic farm input for the production of seaweed lack of knowledge for a competitive price, therefore, there is a need for seaweed producer to have an assistance in getting the production input to enhance seaweed production, assistance in knowledge of disease that also may affect the production of seaweed.

Many studies have been done regarding seaweed farming and seaweed production around the world. The reviewed studies shows different thing in relation to seaweed production and farming, such as impact of seaweed on house hold income, price influence on seaweed, commercial seaweed farming, value chain analysis. But many studies failed to show how seaweed production can be financed to increase the output (quantity) and improve quality which both aspect could lead to positive outcome from different studies that have been done regarding seaweed. Therefore this study currently address the research gap that was found in literature review.

### **3. METHODOLOGY**

This study was carried out in Zanzibar (Unguja and Pemba). The study population was seaweed producers in Zanzibar which is 32,000. The sample size of the study was 100 respondents who were selected as the sample for the study which were seaweed producers. In this study, the researcher used simple random sampling techniques due to their accuracy and flexibility. The researcher used the simple random sampling procedure to sample 100 seaweed producers through questionnaire. The study used primary data. The researcher used questionnaire to get information from seaweed producers on the Government Finance through Commercial Banks. Descriptive statistics used to analyze quantitative data in the form frequency distribution.

### **4. FINDING AND DISCUSION**

Base on the method used the researcher found that there are many finance provided by Government through Commercial Banks to seaweed producers. This is shown in Table 1 that 91% of the respondent do not benefit from the finance and only 9% benefited from the Finance provided by Government through Commercial Banks.

**Table 1. Finance provided by Government through Commercial Banks to Seaweed Producers**

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	<b>Frequency</b>	<b>Percent</b>
Valid Yes	9	9.0
No	91	91.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source: Field work (2022)**

Moreover on the Impact of Finance provided by Government through Commercial Banks, the researcher found that only 9% of the respondent uses the Finance to have an access of input materials such as seedling, ropes, tie ties, tools and equipment's and output materials such as packaging, branding. And the Finance cannot be used to finance expatriates, better storage facility and employ number of human resources to increase production of seaweed.

**Table 2. Accessibility of Input due to Finance provided by Government through Commercial Banks to Seaweed Producers**

	<b>Frequency</b>	<b>Percent</b>
Valid Yes	9	9.0
Neutral	91	91.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source: Field work (2022)**

The Table 3 shows the condition required by Commercial Banks to seaweed producers, where 9% of the respondent shows that the condition was to be in cluster rather than individual and the remaining 91% were neutral. However other condition were number of years in seaweed industry, production volume, selling quantity (volume) and income generated per month.

**Table 3. Condition Required by Commercial Banks to Seaweed Producers**

	<b>Frequency</b>	<b>Percent</b>
Valid Seaweed Cluster	9	9.0
Neutral	91	91.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source: Field work (2022)**

On the side of the financial control provided by Commercial Banks to seaweed producers Table 4 shows the Finance Controls such as education on the types of Finance and training on the utilization of the finance are provided, however only 7% received such finance control, 2% did not receive and the remaining 91% were neutral.

**Table 4. Availability of Finance Control Provided by Commercial Banks to Seaweed Producers.**

	<b>Frequency</b>	<b>Percent</b>
Valid Yes	7	7.0
No	2	2.0
Neutral	91	91.0

## **5. CONCLUSION**

Seaweed producers in Zanzibar use their internal finance to finance their production process, however they are in need of external finance, the finance they mostly prefer is loan, but however hire purchase loan is considered to be suitable finance to them because during data collection one respondent said there are boats which were given to them as loan by seaweed corporates and they succeed in paying of the debt. But however many of the respondents were not aware of the loan and their terms because some of them think that the loans that are provided by Commercial Banks are with interest and based on the Religion of Zanzibaris interest is prohibited and its haram.

However at the time like in Zanzibar which is a Blue Economy Era it is important for the Government to put more effort in helping seaweed producers, because in seaweed industry it is not only about producing seaweed and selling but it's about taking seaweed into another level of production where on the other side it helps in attracting tourism where in return adds value in tourism as well. Therefore it is important for the Revolutionary Government of Zanzibar to seat down with the Commercial Banks in Zanzibar to provide finance to seaweed producers at a shorter period of time with few conditions and enhance them to take the finance.

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