

Faculty of Tropical AgriSciences



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AgriSciences**

Assessment of Women's Empowerment in Aquaculture Cooperatives,

Evidence from Masvingo Rural District, Zimbabwe

MASTER'S THESIS

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Declaration

I hereby declare that the master's thesis Assessment of Women's Empowerment in Aquaculture Cooperatives, Evidence from Masvingo Rural District, Zimbabwe entitled all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague date

Paula Raviro Gapa

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Abstract

For decades the issue of women empowerment has been a key issue. Women have been fighting for gender equality in all spheres of empowerment since Millennium Development Goals era and now it's being addressed by Sustainable Development Goals. All Sustainable Development Goals are centered on the achievement of Goal 5 which aims in reaching gender equality by 2030. They contribute to agriculture and rural enterprises as a result it is a necessity to empower them socially, economically and politically. The study aimed in assessing and evaluating the role of aquaculture cooperatives in women empowerment in Masvingo rural district in Zimbabwe. Aquaculture cooperatives were introduced by a local organization called Aquaculture Zimbabwe with an aim of creating sustainable rural livelihoods due to high rate of rural poverty in the area. Kabeer, Women Empowerment Framework was used with emphasis on agency, decision making and achievements. The study engaged 7 aquaculture cooperatives and 233 respondents were interviewed. The respondents were purposively selected using random sampling and most of the respondents were women. The data analysis methods used were descriptive statistics and logistic regression model. The results obtained showed that decision making, aquaculture training and aquaculture as a livelihood has a significance in empowering women in the aquaculture cooperatives. Full potential contribution of aquaculture is unappreciated and ignored by most agricultural and rural development professionals and policy makers, yet it has the potential to empower women. There is need for Governments, private sector and public stakeholders to recognize the contribution of small-scale fisheries.

Key words: women empowerment, gender, rural poverty, aquaculture

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Abbreviation

AQZ	Aquaculture Zimbabwe
CBNRM	Community Based Natural Resource Management
FAO	Food and Agriculture Organization
FAA	Food Assistance for Asset
DLPD	Department of Livestock Production and Development
EMA	Environmental Management Agency
ILO	International Labor Organization
MDG	Millennium Development Goals
NGO	Nongovernmental organizations
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Science
WE	Women Empowerment
WF	World Food Program
UN	United Nations
USAID	United States Agency for International Development
UNSD	United Nations Sustainable Development
ZFPA	Zimbabwe Fish Producer's Association
ZPWMA	Zimbabwe Parks and Wildlife Management Authority

1. Introduction

To empower women, there is need to address women's strategic needs. Aquaculture plays a critical role in food and nutrition security, economic empowerment and creation of employment opportunities for millions of people (FAO 2002). However, the benefits from aquaculture are not evenly distributed between men and women due to gender-based constraints which limit maximum returns, yet women's empowerment is the process of empowering women (UN Women 2021). Women empowerment is among one of the key issues in addressing the Sustainable Development Goals 2030. In Zimbabwe in the rural areas most women play a major role in household management and contribute significantly to the rural economy through agricultural activities. Their important role is not translated into equality of opportunity in gaining access to productive resources, markets and services. This difference between men and women is referred to as the 'gender gap' (UN Women 2021). Empowering women with knowledge and skills related to aquaculture can positively impact household nutrition, food security, and income. However, land ownership, access to credit, lack of market, lack of government support and exclusion in aquaculture policy making hinders women's potential to contribute to sustainable aquaculture. To fully promote women empowerment there is need to involve all stakeholders involved in community development (Lombardini 2017). Therefore, there is need to review aquaculture policies in Zimbabwe and analyse how best they empower women involved in the Aquaculture sector.

2. Literature Review

The study looked at three dimensions of Women Empowerment (WE), which are economic, social and political, they are commonly found in literature concerning WE (Habibov et al. 2017). The economic dimension refers to control over material resources and their claims. WE in the social dimension is measured by access to social resources. The political dimension analyses inclusion in political processes and women's political knowledge (Pratley 2016). The three-dimension used was inspired by Kabeer WE conceptual framework. Secondary data used to analyse the study were mainly case studies from Africa.

2.1 Measurement of Women's Empowerment

Women Empowerment (WE) is very complex and there is no unified approach of measuring this dynamic value. In this section, several methods on how to measure WE are described. Because of its complexity, WE measurement should always be considered in relation to the area within its cultural and social context (Kabeer 1999).

Women's empowerment is also measured on different levels at the household level, community, and broader level (Malhotra & Schuler 2002), which is very similar to the approach defined by Oxfam (Oxfam GB 2017). WE is the most critical solution to today's problems around the world (Laszlo 2020). Gender equality and WE are crucial because they relate to fundamental human rights. WE ensures that women can enjoy their human rights and contribute to sustainable development through the rural economy (ILO 2019). Three dimensions described by Kabeer (1999), note that women's empowerment is measured looking at access to resources, access to agency, and acquired achievements. Resources includes economic materials as well as social and human resources. Agency is mostly connected with the ability to make strategic decisions, and achievements measured by well-being outcomes. Agency can be furthermore divided into intrinsic, instrumental, and collective (UN Women 2021). Other modified models can be found for example in the combination of resources with the intrinsic and instrumental agency, with consideration of SDGs for cross-country comparisons (Miedema et al. 2018). The issue of gender equality is embedded in the SDGs from 2015 and should be reached by 2030 (UNSD 2021).

According to UN Women (2021), there are seven principles of women's empowerment as stated below which can be used to empower rural women:

1. Establish high-level corporate leadership for gender equality.
2. Treat both women and men fairly, respect and support human rights without discrimination.
3. Ensuring that both men and women receive equal t health, safety, and well-being.
4. There is need for education and skilled training to empower women.
5. Empower women by Implementing enterprise development, supply chain and marketing practices.
6. Promote equality through community initiatives and advocacy.
7. To achieve gender equality by measuring and publicly report on its progress.

In agricultural context, Women's Empowerment in Agriculture Index (WEAI) can be used as a tool to measure WE. In his study, Alkire (2013) described the structure of WEAI. It consists of two dimensions; the first one contains five agricultural domains such are: *“access to productive resources, control use of income, decisions on agricultural production and leadership in the community”*. The second dimension is the measurement of gender parity in the household. The weights of these two dimensions are not the same. In calculation agricultural domains are for 90% and gender parity is for 10%. The study by Sell and Minot (2018), which focused on factors of women's empowerment in Uganda among small scale farmers, the findings revealed that the older the couple was, the more empowered the woman was. Reversely, the mean education was not a significant variable, although it still contributes to women's empowerment. Another statistically significant variable was the distance to the nearest flagged road. The further the distance was, the less empowered the woman was. This means that empowerment is significantly connected with geographic patterns such as local languages, different regions, and their cultural differences (Lombardini 2017).

Women empowerment dimensions are interconnected.

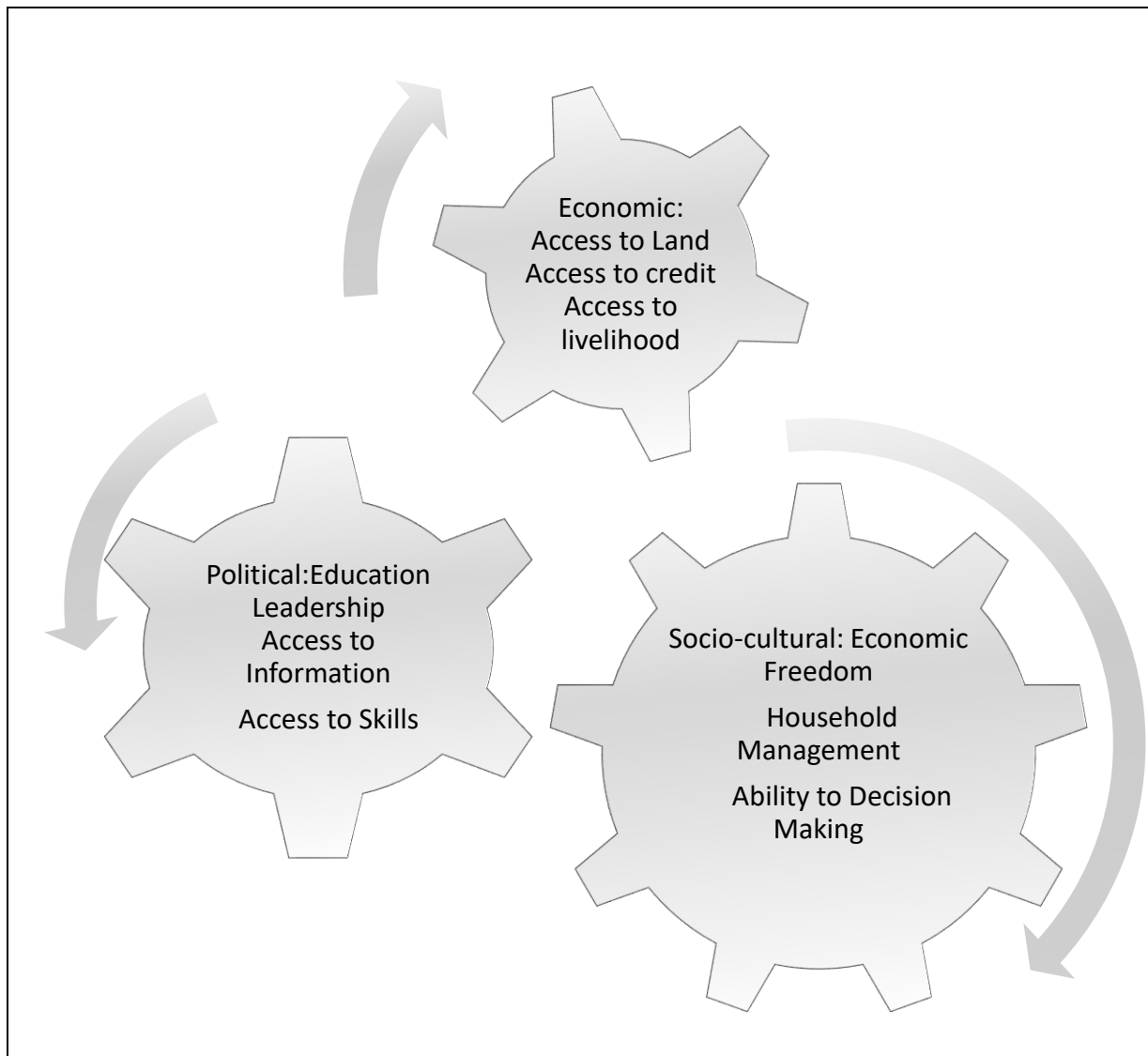


Figure 1 Own source, Inspired by Kabeer (1999), Women Empowerment Framework.

2.2 Economic Dimension (Resources) of WE

Access to resources that contributes to economy is part of empowerment. Poverty eradication and inclusive economic growth is essential in investing towards women's economic empowerment as it sets a direct path towards gender equality. Women economic empowerment is the capacity of women participation in, contribution to and benefit from growth processes in ways that recognize the value of their contributions and respect their dignity (UN Women 2021).

2.2.1 Access to land

Owning a property is a recognized tool for empowering women. In Zimbabwe, the launch of the fast-track land reform program brought in a new dispensation in the country's land tenure systems where major resources inclusive of land were allocated to men, who eventually became the major beneficiaries of such schemes neglecting women (Muchara 2010). In some developing countries they are established policies to empower women by ensuring that women with property rights can own assets like land or livestock, manage a property, conduct business, or travel without their husbands' consent (Doss and Meinzen-Dick 2020). In Kenya a study by Amankwa et al. (2016) showed that women involved in agriculture activities like aquaculture are members of community cooperates which are operated on the community land. Although women have successfully participated in agricultural activities in Rwanda, their contribution to fish farming faces a challenge in land ownership, it is difficult for women to own land within the community. Several governments dealing with land reforms have responded with regulations for occupancy, but these have not been fully implemented at the lower level (Mapendo 2018). As a result, women's contribution is not commensurate to the benefits they enjoy from fish farming (Harrison et al 2016).

2.2.2 Access to credit

Microfinance indicators used in this case study were access to credit , information on financial and extension support for establishment of cooperatives (from government or NGO). The microfinance services can also be used as an instrument to measure and monitor women through an analytical framework (nonparametric method), to determine the effects between microfinance programs and WE (Archana 2016). According to MFIs and Nongovernmental organizations (NGOs), the need for access to credit is key to poverty reduction and WE. In 2018 Zimbabwe launched Zimbabwe

Women's Microfinance Bank (Women's Bank) as a registered Microfinance Institution (Chazovachii et al 2017). The Bank is mandated to empower all women economically and socially by providing access to affordable and innovative women-centered financial products and services (Chatiza 2019). However, these companies engaged in loans for women to invest in income-generation projects have been criticized because they generate debt-dependent social relations (Tanima et al. 2020). Kuma et al (2018) examine the interaction between monetary policy and empowerment because it can influence the supply of loanable funds, increasing or decreasing the traditional money transmission channels. These policies would increase the economy and increase WE, thus increase all people's welfare. However, economic development in aquaculture alone is not enough to empower women. The country's government must enforce new policies and rights that would affect women and girls. These policies shall be in the economic sphere, such as monetary policy, financial intermediation and banking, and a social policy related to the economy (Kuma et al 2018).

2.2.4 Aquaculture as a livelihood

WE is also measured by the sustainable of women livelihood income. For Machena et al (2001), livelihoods constitute capability assets and activities that are necessary for life sustenance and a livelihood is sustainable when it can cope with and recover from stress, maintain and enhance. Women in rural areas are key players in ensuring household livelihood outcomes, they often manage households and pursue multiple livelihood strategies. They play key roles as food producers and agricultural entrepreneurs (Machena et al 2001). Rural women are key agents for achieving the transformational economic, environmental and social changes required for sustainable development (UN Women 2021). They need more access and control of resources, which together constitute the empowerment capabilities leading to improvement in their livelihoods (Chatiza 2019). As a result, acknowledging the intrinsic contributions of women in fisheries is not new in literature and in recent times, gender dimensions of fisheries are gradually gaining popularity at the international level, yet women are still marginalized in access to and control over fisheries resources in many parts of the world (Habibov et al. 2017). In sub-Saharan Africa most countries, formal statistics rarely reveal the extent and nature of the contribution of women to men's pursuit of fisheries as a livelihood. A study by Shava and Gunhidzai (2017) carried in Zimbabwe, in Binga district noted that women are more common in small-scale

production, post-harvest industrial and artisanal processing, value addition, marketing and sales. However, another study in Zimbabwe showed the significance of aquaculture as a livelihood. The Bhindawuko Women Fishing Project has made history in Zimbabwe by empowering rural women to venture into the traditionally male-dominated fishing industry. Ten rural women (referred to as “Queens of the Lake”) currently own and operate a *kapenta* fishing rig. Traditionally, Tonga women had significant power within the community regarding access to and utilization of natural resources (UNSD 2021). In Nigeria women’s participation varies according to the type and scale of aquaculture, e.g., women produce more fish from freshwater ponds than from marine cages. The division of labor varies according to the type of farming, capacities, and relationships. Where women are literate and financially capable, they often manage the farm records and finances (Obwanga et al. 2018). West African women have always contributed immensely to all areas of economic and social lives of their families and households, as farmers, entrepreneurs, traders, workers, home makers, mothers and many more. They make noteworthy strides in all aspects of the economy especially in the aquaculture sector (Obwanga et al. 2018).

2.3 Social Dimension of WE (Agency)

Social women empowerment helps in boosting the status of women through decision making. Women social empowerment refers to women's ability to independently make choices concerning her wellbeing without being controlled (Chatiza 2019). Social empowerment is a process of developing self-confidence and being able to control and manage to change social relationships and the institutions that oppresses the poor and those vulnerable (Chitongo and Casadevall 2019).

2.3.1 Ability to Decision making

Women empowerment is giving legitimate power or authority to perform the tasks (Chawatama et al. 2017). If women were empowered, they would be able to participate in the planning and decision-making task and contribute to the development programmes and activities individually (UNSD 2021). Studies conducted so far identified different factors like, age, educational status, income and marital status were common among rural women were found to be significantly influencing women’s decision-making power (Lecoutere, 2017; Dohmwirth and Hanisch, 2019). Zimbabwe is a patriarchal society where men make all decisions both in the society and in their family unit, they hold all positions of power and authority, and are considered superior. In rural

Zimbabwe the farming unit is the main source that produce family food requirements and selling whatever surplus arises is controlled by men (Chazovachii et al 2017). This is in line with other African countries who are also patriarchal societies like Zimbabwe, In Tanzania resources are managed differently between the sexes (Duflo 2011). Most studies indicate that men are predominantly heads of households and holds the final say in every decision in the house (Tsikata 2014; Malapit et al 2019). Therefore, it is imperative that non-involvement of women in decision-making positions in aquaculture encourages gender disparity and breeds social and economic injustices in communities (Chitongo and Casadevall 2019).

2.4 Political Dimension (Achievements)

Women's political participation is a fundamental prerequisite for gender equality and genuine democracy (Lombardini 2017). Increasing women's political participation can be achieved through access to information and skills. Leadership roles are vital mechanisms that support women to realize their human rights.

2.4.1 Access to Information and skills

Access to information is fundamental for women's empowerment. States and other stakeholders should ensure women have full rights and facilities to access information as a mechanism to overcome gender inequality (UN Women 2021). Access to information and gender equality are part of States' commitments under the Sustainable Development Goals (SDGs), and are included under Goals 16 and 5, respectively and they are closely linked in promoting women empowerment. Information on the role of women in aquaculture is limited as most private aquaculture ventures by women may not have been documented (Chagwiza et al 2016). There is a need to publicize the role women play in sustainable aquaculture development to encourage the participation of more women in aquaculture enterprise as this can alleviate poverty (UNSD 2021). In research conducted by Muchara 2010, in Zimbabwe, Mwenezi District indicated that most women involved on aquaculture are lagging behind in terms of information on aquaculture due to the traditional norms that restrict women to travel a distance leaving house chores unattended. A workshop done in Kenya by Aqua Fish researchers on Aquaculture Sustainable Practices included women participants and it covered issues on pond construction and design, fertilizer applications, feed practices, and pond management (Kundu et al. 2016). At the conclusion of the workshop,

participants agreed to form a farmer's association to continue working together (Kundu et al. 2016). In Mozambique, women undertake projects for fish drying using indigenous and available spices which can be marketed during the lean season to earn good returns on their investment. Besides, they can also buy fish from the trawler and deep-sea fishing boats directly (Lawless et al 2019). Also, many women in the rural areas in Maputo are involved in making prawn/fish feed at home for their own use. It has also become an important income-generating activity as they can sell the feed to other farmers in the area (Pedroza-Gutiérrez 2019). If women were empowered by aquaculture interventions, this could translate into improved nutrition outcomes for them and their children and these skills acquired can be passed to the next generation (Kundu et al. 2016). Franklin Benjamin noted that, *tell me and I forget, teach me and I remember, involve me and I learn*. As a result, this shows the importance of engaging women to promote women empowerment.

2.4.2 Leadership

Within the leadership skills of female empowerment, communication, negotiation and persuasion stand out (UN Women 2021). Women who are given leadership roles are empowered and they are able to influence the environment (Chatiza 2019). They have professional skills that make them committed to innovation. To achieve this support, empowered women assume the responsibility of creating change, of leaving the traditional role that society has assigned them and exploring innovative paths that promote female empowerment (Chagwiza et al 2016). Being aware of the circumstances and obstacles that many working women face, empowered women do not seek to compete or compare themselves with others, but instead fight to eliminate those barriers and invite other professionals to follow in their wake (Makate et al. 2016). In Sub Saharan Africa since 2012, NGOs and governments are more focused on gender than before (Annan et al. 2019). In Zimbabwe, though a high number of women are found in agriculture activities, less than 42% occupy subordinates' positions in cooperatives (Shava & Gunhidzirai 2017). In Nigeria, the government is exhorted to legitimize the 35% Affirmative Action on Gender Parity as a first step to achieve pure gender equality. Additionally, the National Gender Policy plays a key role in promoting and establishing equality and fairness between men and women in the private and public sector (Manyungwa et al 2019). In contrast, the government in Uganda failed to legitimize the law for gender equality. NGOs, civil society and donors initiate meetings with key persons such as the

Ministry of justice, to encourage the establishment of a network of smaller associations to promote gender equality and women's empowerment, using media or workshops to inform the wider society (Gemma et al 2013). In Rwanda, cooperatives are supported by the local government and the policy of promoting women in leadership positions seem to be working as well. Women are part of the decision-making process on the cooperative level, and they are even more trusted than male members (Duflo 2011).

2.5 Aquaculture Production in Sub-Saharan Africa

In sub-Saharan Africa, the aquaculture is lagging due to lack of organizational capacity, good governance systems and sufficient capital and appropriate technology to meet market standards and demands (FAO 2002). These constraints limit women in fisheries from economic empowerment. It is important to promote collective marketing, organize and form a network is y important ,it offers a chance for women to negotiate for a competitive price that brings greater visibility to women's role within the sector and helps in overcoming constrains that hinders aquaculture production (Tsikata 2014; Malapit et al 2019). Zambia is the biggest produce of fish farming in sub-Saharan Africa, it presents the most favorable fish farming opportunity, supported by the abundance of land and water sources. About 14 100 freshwater fishponds are available in Zambia which are still to be tapped FAO (2018). Chagwiza et al (2016) reiterate that aquaculture in Zambia is still being operationalized at a subsistence level by small-scale farmers of low status although they are being constrained by lack of technology. FAO (2002) argues the lack of capacity in the government to exploit the viable fish farming which can be diversifying production and developing the export market for the largely rural Zambian economy. These studies reflects the connection between aquaculture value distribution and women empowerment.

2.6 Aquaculture Policies in Zimbabwe

To fully promote WE there is a need to involve all stakeholders involved in community development (Lombardini 2017). Therefore, there is a need to review aquaculture policies in Zimbabwe and analyse how best they empower women involved in the Aquaculture sector. Fisheries Management under the Zimbabwe Parks and Wildlife Management Authority which also under the Ministry of Environment and Natural Resources Management. It is responsible for wildlife and fisheries management. Wildlife issues tend to overshadow fisheries issues (FAO

2018). The principal legislation (i.e., Parks and Wildlife Act) governing fisheries management is skewed more towards wildlife issues than fisheries issues (EMA 2017). In Zambia and Malawi fisheries have a significant institutional profile in fisheries management and it has progressed significantly. The organizational restructuring that occurred in the Zimbabwe Parks and Wildlife Management Authority during the implementation of the co-management programme resulted in significant staff changes (transfers and staff turnover). This negatively impacted implementation as there was no smooth transition (hand-over) of the programme (Chatiza 2019). Lake Kariba is the only lake in Zimbabwe that produce fish and kapenta for commercial distribution. As a result to improve implementation of the Co-management programme on Lake Kariba, it is essential for Parks (ZPWMA) to implement a management approach that incorporates the key stakeholders. These stakeholders contribute in artisanal fishery, kapenta production, agricultural trainings through extension officers in the Department of Livestock Production and Development (DLPD). These stakeholders include Rural District Councils (RDCs), namely Namanya and Binga Rural District Councils. These stakeholders can be involved in activities such as resource monitoring (catch and effort data collection), law enforcement as well as fisheries management meetings (EMA 2017).

In Zimbabwe the wildlife management has traditionally followed a top-down approach with the state owning the wildlife in protected areas and enforcing wildlife legislation through state agencies. However, several innovative responses to the weaknesses in top-down wildlife management approaches have been introduced (Chenje, 2017). The Parks and Wildlife Act of 1975 is viewed as the game changer Wildlife and Fisheries Management in Zimbabwe. The Act put to rest the confusion that prevailed over separation of administration of parks on one hand and of wildlife outside national parks on the other. It was also a milestone in trying to provide legitimacy to commercial farmers to manage and utilise game on their own farms (Chatiza 2019). The 1975 Parks and Wildlife Act established National Parks, botanical reserves, botanical gardens, sanctuaries, safari areas and recreational parks. Under the Zimbabwe Parks and Wildlife Act of 1975 and its subsequent amendments (e.g., the Parks and Wildlife Act Chapter 20:14 of 2001) all forms of hunting are prohibited in national parks, with hunting permitted in safari areas and sanctuaries under a permit system (Chatiza 2019). The Act and its associated statutory instruments form a comprehensive wildlife management framework which thrives for both preservation and conservation of wildlife in Zimbabwe (Makate et al. 2016).

2.7 Aquaculture in Zimbabwe

At the launch of Zimbabwe Fish Producer's Association (ZFPA) 2017 aquaculture or fish farming was integrated into agriculture as part of the livestock sub-sector. Fish farming was regarded as a livestock enterprise that has the potential to be developed into a full-fledged agricultural industry in Zimbabwe (FAO 2018). The EU-funded Smart Fish programme is currently developing capacity building strategies to advance fish farming in the country. The fish farming industry in Zimbabwe is growing and has the potential to be developed into a major industry as Zimbabwe boasts 60% of the dammed water (Chazovachii et al 2017). About 5% of the 400 000 hectares is being actively used for fish farming whereas commercial tilapia operations are vibrant in Lake Chivero, Kariba and Darwendale (FAO 2018). However, the potential of fish farming in Zimbabwe is still largely untapped as noted by McCollum, the Chairman of ZFPA (Chazovachii et al 2017). The establishment of Aquaculture Quality Control Laboratory in Harare enables fish farmers to receive training in aquaculture value chain, marketing, trade, and business development (Makate et al. 2016). In Zimbabwe the aquaculture sector is still growing hence they is need of networking with other African countries like Kenya, Tanzania, Ghana, Namibia, and South Africa that are rising high in fish farming (Chazovachii et al 2017).

The study was able to analyses and examine the research objectives with the help of the definitions and case study in the literature review. Women empowerment was measured in line with the information provided in the literature review including the conceptual framework of Kabeer (1999). Case study used showed contribution of aquaculture on women empowerment. However, most case studies in the literature review showed that aquaculture is contributing less to women empowerment. This study aimed in analyzing women empowerment through aquaculture in Zimbabwe and see if it also concur with other case studies used in the literature review.

3. Aims of the Thesis

Objective: The objective was to assess aquaculture cooperatives contribution to women empowerment. The study focused on the social, economic and political contribution of aquaculture on women in cooperatives in Masvingo rural district.

3.1 Specific objectives

- To analyse the process that promote women empowerment
(Education, access to credit, livelihoods, decision making ability)
- To examine the impact of Aquaculture Cooperatives on women empowerment
(Lack of market, aquaculture trainings, aquaculture policies)
- Analyzing the constraints women face in cooperative and household management
(Cultural norms and values, land ownership, leadership, economic freedom)

3.2 Research questions

To reach the aim of the objective of the study and based on the literature review and indicated study gap, the research addressed the following objectives, to get an analysis of WE through aquaculture cooperatives:

- a) What inspired you to engage in the aquaculture production?
- b) What is the main challenge in the growth of your cooperative?
- c) What is the main challenge of women empowerment?

4. Study Area

Masvingo district is known as a drought prone area, erratic rainfall in the region hinders production of cash crops making rural communities face high challenging situations. The district face vulnerable poverty trap and their disposable income per household is reduced (Muchara 2010: Chazovachii et al 2017). Outside of the perpetual failures in yearly crop planting due to poor rain, the rural communities depend on trading and casual jobs (off farm activities) as their sources of income (Mufudza 2015: Nhamo et al 2017). As such the emergence of the aquaculture cooperatives came in as a development livelihood to add to the few opportunities that women have in their household and the community at large. The study focused on Masvingo rural district because it is the most drought prone district in Zimbabwe and it is the first district to engage in fish farming projects. The aquaculture farming (mainly tilapia fish farming) was first introduced in the district by WFP through a local NGO called Aquaculture Zimbabwe (AQZ) which aim in improving vulnerable rural communities' incomes and livelihoods through aquaculture and fisheries sector by providing information and low-cost production technologies for use in sustainable integrated farming systems in rural communities in Zimbabwe. The project was funded by USAID, and it was a 5-year project under Food Assistance for Asset (FAA) program. It started in 2012 and ended in 2016. Under the FAA program AQZ partnered with the Government of Zimbabwe. The program constructed 23 ponds and 10 hatchery ponds in the district in 10 wards out of 23 wards and it registered 10 cooperatives. However only 7 cooperatives are fully functioning, 3 other cooperatives are no longer functioning, and the fishponds are deserted. In Africa most fish farming projects were introduced by Non-Governmental Organization and their aim was to improve rural livelihood and empowering women (FAO 2018).

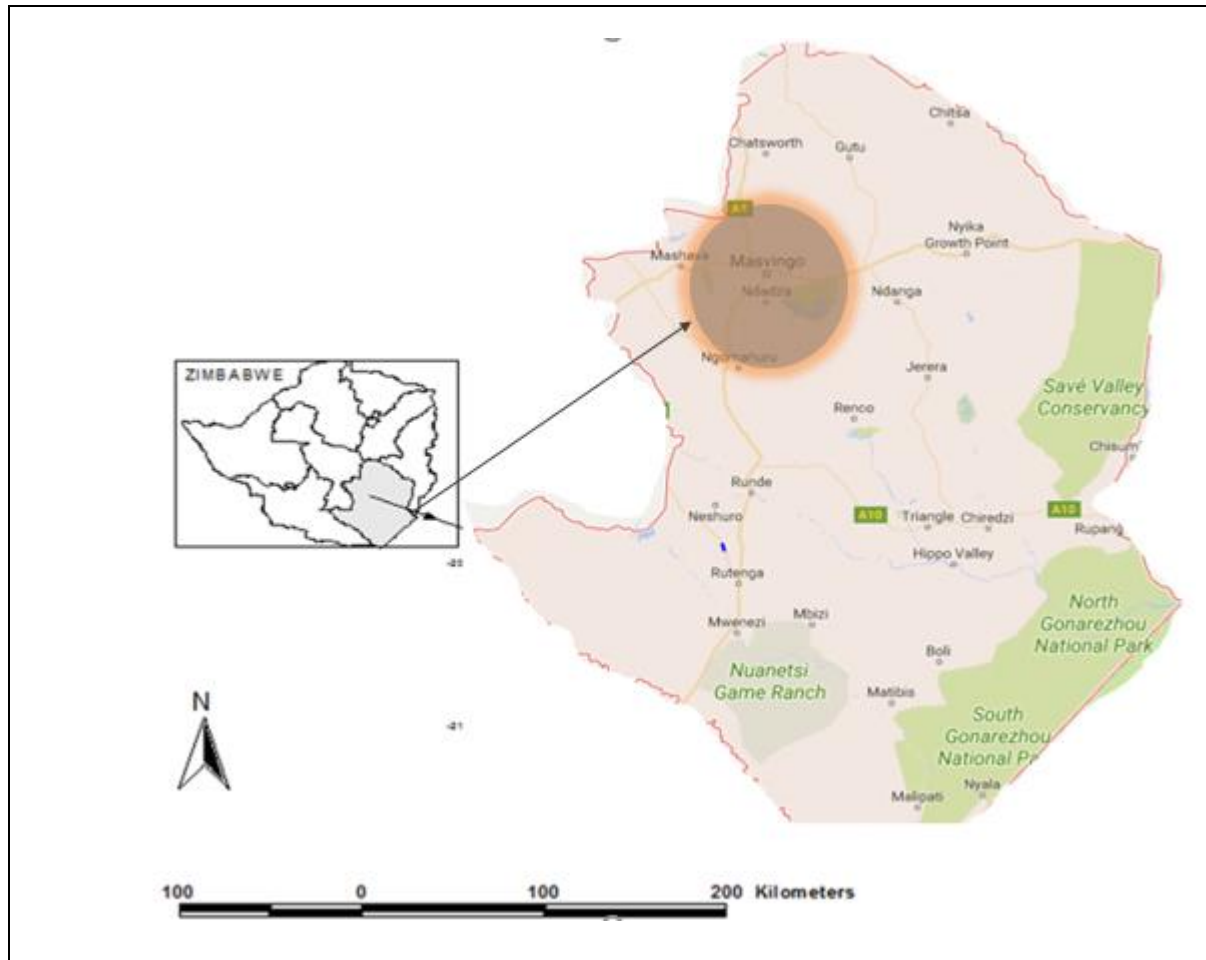


Figure 2 Map of Masvingo rural district (source: Author)

5. Methodology

To explore the relationship between aquaculture and women empowerment the variables were categorized in 3 dimension which are economic, social, and political. The data was collected through personal interviews with members of aquaculture cooperatives in Masvingo rural district. WE measurements variables used was in line with that of Kabeer (2001) which are resources, agency and achievements. The research adopted the quantitative method approach. The rationale behind the choice quantitative approach was arrived at after a careful consideration of the nature of variables under investigation (Habibov et al 2017). The variables in questionnaire included process of WE in development, impacts of aquaculture cooperatives in WE and analyzing constraints of women in aquaculture cooperative and household management. The primary data was collected through structured questionnaire, observation and directed interviews method, whereby each questionnaire was directly administered per individual. The quantitative data collected was used to assess the variables in role of aquaculture cooperative in WE.

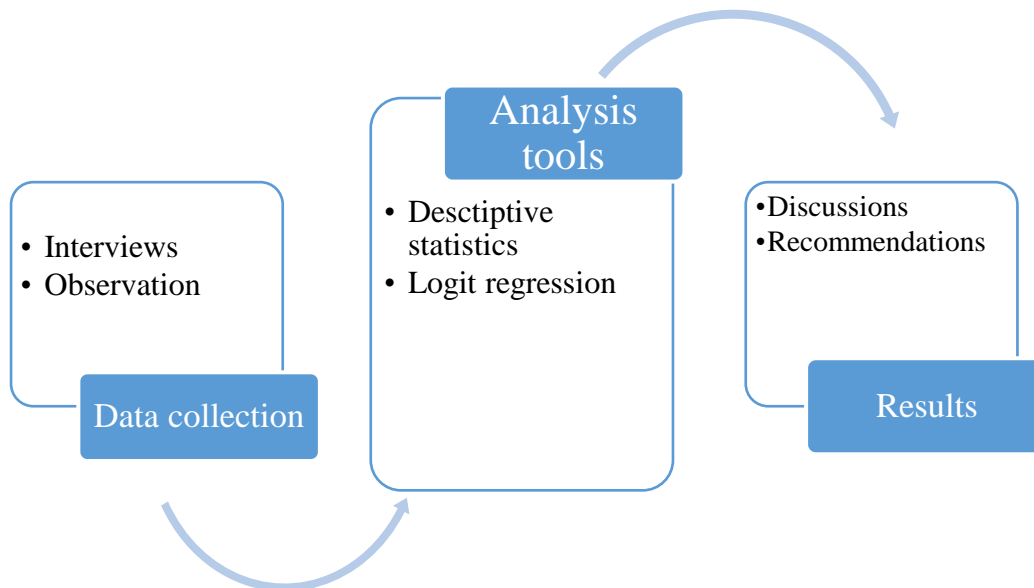


Figure 3 Methodology of research

5.1 Women's Empowerment Conceptual Framework

The research was done in line with Kabeer women Empowerment Conceptual framework. Kabeer (1999) use Resources (Preconditions), Agency (Process) and Achievements (Outcomes) to assess women empowerment. The table below shows the empowerment domain, identification of WE principles variable and category used to analyse the WE framework. Kabeer three domains of WE (relating to Resources, Agency, and Achievements) were measured by relating to the proximity of the concept: direct, indirect and constraints. Direct measures are defined as a woman's ability to assert her preferences in decision-making Agency in Kabeer (2001). The indirect measures were the outcomes of the decision-making process. The constraints measures were factors outside of a woman's direct measures or her household, which cannot reach through her access. Hence because of its complexity, WE measurement is considered in relation to the area cultural and social context.

Table 1 Kabeer (1999) Women Empowerment Conceptual Framework

Domain	Indicators
Resources	Future claims, expectations Economic Resources (land, finance, working capital) Social (obligations, expectations) Human (own skill, knowledge, and imagination)
Agency	Exercise of power of "non-decision-making" Collective reflection and action Individual reflection and action Purposive actions (Bargaining power)
Achievements	Capabilities, "Being and Doing"

5.2 Description of target groups

The study interviewed 7 cooperatives out of 10 cooperatives in the district. The other 3 cooperatives no longer exist though the study was able locate few former members. The study targeted women cooperative members more since the gap of the study is to analyze the contribution of aquaculture cooperatives to, WE. Female members interviewed where 156 (67%) and 77 (33%) males. However, due to Covid-19 lockdown restrictions which restricted more than 10 people to gather at once the research interviewed 233 cooperative members out of 267. The respondents were still representative enough.

Sample Technique

Random sampling was used in selecting cooperative members. Random sampling is a type of probability sampling where everyone in the entire target population has an equal chance of being selected (Harrison et al 2016). The sampling procedure was adopted because it helped in minimizing sampling errors while ensuring more reliable and representative sample of the desired intention.

Table 2 Sample size distribution

Cooperate	Females	Males	Total population
Sekenende	22	9	40
Dzingazhara	25	12	40
Mugwisi	18	14	40
Mushenjere	21	13	40
Makota	24	10	37
Topora	26	8	35
Chiwariro	20	11	35

5.3 Data collection and tools

The research was conducted with a combination of questionnaire administering, interviews and observation. The selection of questionnaire variables was based on the understanding of the desired outcomes of the study. The interview was conducted in Shona (one of Zimbabwe official and widely used language). The questionnaire provided the best tool and was the nucleus of the

research as it was pivotal in gathering primary factual and authentic data with relation to the targeted population. The questionnaire divided the questions in five categories:

- a) *Household and characteristics*: age, gender, marital status, educational level and household size
- b) *Economic*: primary income, aquaculture expense and profits and challenges of aquaculture
- c) *Social*: land ownership, decision making ability, leadership and household management
- d) *Political*: Engagement in aquaculture policy, knowledge of aquaculture policies, knowledge on climate change, aquaculture training, institution conducted trainings, knowledge on cooperative financial and extension support

e) *Constrains Perceived constraints for women empowerment in aquaculture*: access to land, access to credit, access to information on aquaculture, access to leadership roles, ability to decision making, culture values and norms (this section included economic ,social and political constrains).

Section E used the five-point Likert scales which helped in evaluating cooperative members responses. Likert (1932) developed these scales to evaluate opinions. The study used the categories of Strongly agree=5, Agree=4, Undecided=3, Disagree=2, Strongly disagree=1.

The data was collected with the help of 8 AQZ enumerators who were on internship. The enumerators were studying animal science degrees hence making it easy to relate to the research topic. The enumerators were taken through a familiarization workshop and group discussion to familiarize with the questionnaire survey and how the data was intended to be collected. The objectives of the researcher informed the process of selection of variables which were used in the development of questionnaires as well as the discussions during the data collection.

Secondary data collection

Scientific articles and journals mainly from online web sources such as Research gate, Science Direct constitute the bulk of the literature reviewed as secondary data, FAO, FAO Stat, World Bank and Zimbabwe government ministry and agencies policy papers as well AQZ files were also used as sources of secondary data.

Primary data collection

The research employed both qualitative as well as quantitative methods. Structured questionnaires were employed for data collection. The interview was conducted in Shona which is the local language and then translated to English. Primary data was collected using a face-to-face interview with cooperative members with the aid of a structured questionnaire considering.

Structure of the questionnaire

The dependent variable views members satisfaction with cooperative. The respondents were asked to state the reason they joined the cooperative. The independent variable view aquaculture contribution to economic, social, and political terms. Below are the main questions asked.

The economic dimension: What inspired you to engage in the aquaculture production?

The social dimension: What is the main challenge in the growth of your cooperative?

The political dimension: What is the main challenge of women empowerment?

Control variables: Aquaculture as a livelihood was a variable used to examine the financial contribution of aquaculture in economically empowering women. Decision making , access to information and skills were also used to examine aquaculture cooperatives in empowering women socially and politically. These factors have been demonstrated in previous on cooperative (Chagwiza et al 2016;FAO 2018; Chazovachii et al 2017). The table below shows how questions where structured.

Table 3 Questions category and variables used

Questions	Variables
Demographics	-Gender -Age -Marital Status -Level of Education attained -Household size
Access to Information and skills	-Aquaculture trainings

	-Knowledge of Aquaculture policy -Knowledge on climate change impacts on Aquaculture
Household Income Index	-Monetary input of Aquaculture as a livelihood strategy -Ratio of livelihoods strategies
Constraints of women Empowerment	-Access to Land Ownership -Leadership roles in the cooperate -Ability to make decisions in the cooperate -Economic Freedom

Set of constraints were provided in 5-point Likert ranking scale (Strongly agree=5, Agree=4, Undecided=3, Disagree=2, Strongly disagree=1), Yes=0, No=1, Maybe=2

5.4 Data Analysis

Descriptive statistics and inferential statistics were used for analyzing obtained primary data. The primary data was analyzed using the Statistical Package for Social Science (SPSS). The descriptive statistics was opted to provide the analyses as this gave the summarization of the data of the information source which cooperative members saw as important. Graphs and tables were also used to analyse the data obtained.

5.4.1 Logit Regression

The data was analyzed using logit regression. Logistic regression model has been widely used in several studies on cooperatives (Chagwiza et al 2016;FAO 2018; Chazovachii et al 2017). Logistic regression model is designed to examine the relationship between binary dependent variable and explanatory variables (Harrison et al 2016). In this study, the explanatory variables were designed according to economic, social, and political features. The binary logit models pertaining to the study are:

$$\text{logit}(\pi_i) = \log\left[\frac{\pi_i}{1-\pi_i}\right] = \alpha_i + \beta_i EC_i + \gamma_{ij} SO_j + \delta_{im} EN_m + \theta_{ik} X_k + \epsilon_i, (1)$$

where π_i is the likelihood of respondent's satisfaction, $\pi_i = P(Y_i = 1)$; EC_i represents the economic function independent variable; SO_j represents the social function independent variable $j(j = 1, 2)$;

P_{Nm} represents the political function independent variable $e_m(m = 1,2)$; and X_k represents the other independent variable $k(k = 1,\dots,4)$.

To assess the effects of explanatory variables on the probability of respondents on contribution of aquaculture cooperatives on women empowerment, marginal effects were calculated as the amount of change in the probability of aquaculture cooperatives contribution to respondent's standard of living(Harrison et al 2016).

Table 4 Variables used in Logit Regression Model

Independent Variables	Hypothesis	Dimension	Reference
Aquaculture as a livelihood	A livelihood comprises of capabilities, assets and activities required for a means of living. It is essential to have livelihood that is sustainable.	The study looked at aquaculture contribution to WE in terms of economic contribution. More focus was on its financial contribution.	FAO (2018)
Ability to decision making	Access to contribute to policy making, buying, and selling of major household materials, able to decide on how to use the money obtained from the aquaculture production all these are necessity in analyzing the contribution of aquaculture to WE.	The study focuses on women in the cooperate involvement in decision making on all the events and decisions within the cooperative	Harrison et al (2016), Kabeer (1999)
Access to Training	For aquaculture to be a sustainable livelihood it requires skills and knowledge.	The study examines if the respondents have received training since fish farming was a new agricultural activity in the district. The study also examines respondents' knowledge on effects of climate change in aquaculture.	Habibov et al (2017), Manyungwa et al (2019)

Own computation 2022

5.5 Limitation of Study

The study was undertaken during the Covid-19 pandemic. The sample size was affected by lockdown restrictions. Covid 19 restrictions did not allow more than 10 people to gather at one place. As a result, we would take a week interviewing 1 cooperative. The primary data collection started in October 2021 and was put on hold due to Covid 19 travelling restrictions imposed by the Government. Travelling restriction did not allow people to travel from the city to the rural areas and there was a curfew which was not in favor to the research since some cooperatives were far from the city and could not be back by 1800hrs. the research then resumed in December 2021 to January 2022. However, the study resumed during ploughing period hence all members could not be interviewed since some cooperative's members where now busy in their fields. This meant that the study was not able to interview as many cooperative members as planned. Moreso, the distances between cooperatives made it difficult to cover more ground, this manifested in the form of financial constraints since the field research was personally funded.

6. Results

The results were structured as follows: demographic and livelihoods characteristics, economic women empowerment, social women empowerment and political women empowerment.

6.1 Demographic and livelihoods characteristics

The table below presents the demographic and characteristics of the responds from aquaculture cooperative members. The gender distribution indicated that 33% of the respondents were males, whereas 67% were females. The study targeted females more. Most members in the cooperatives are married giving lesser percent for the widow, divorced and single. Most of the cooperate members indicated that they survive on casual labor where they work on people's farms, washing clothes and fetch water for builders they call it *maricho*. Casual labor is represented with 30.5%. Other members are into trading where they deal with buying and selling of food groceries, fruits, clothes, and transportation with a represent of 26.6 %, while 19.7% of the committee members rely on remittance mainly from their relatives in South Africa a neighboring country and Harare the capital city. Also 16.3% of the respondents are farmers who mainly grow maize and groundnuts. Among the cooperate members were also civil servants who holds 4.3% who are teachers and agriculture extension officers they noted that their pay alone is not able to cater for their expenses hence the have joined the cooperatives to earn some cash and 2.6% of the members are currently tertiary students.

Table 5 Demographic and livelihoods characteristics

Variable	Description	Frequency	%
Gender	Male	77	33
	Female	156	67
Education Qualification	Primary Certificate	38	16.3
	Secondary Certificate	157	67.4
	Tertiary Certificate	35	15
	Never Attended	3	1.3
Marital Status	Single	32	13.7
	Married	154	66.1
	Divorced	26	11.2
	Widow	21	9
Land Ownership	Bought my land	14	6
	Inherited land	52	22
	Resettlement	6	3
	Rented	8	3
	Belong to my husband	151	65
	Community Land	2	1
Livestock Ownership	Yes	167	71.7
	No	66	28.3
Primary Income	Trading	62	26.6
	Farming	38	16.3
	Student	6	2.6
	Remittances	46	19.7
	Casual Labor	71	30.5
	Civil Servant	10	4.3

Own computation 2022

6.2 Economic women empowerment

Every human has the right to control the economic freedom on property and labor. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please (Habibov et al 2017).

6.2.2 Aquaculture as a livelihood

Figure 4 below showed that most people joined aquaculture cooperates for financial benefits those members amount to 94.8% (221) though it is not their major livelihood this reveal the economic hardship faced within the rural community as people are engaged in multiple livelihoods to cater for their expenses. 4.2% (10) of the total respondents joined the cooperative to learn about fish farming since it was something new, they illustrated that they were used to do fishing in the rivers not farming fish in the ponds. 1% (2) of the responses joined the cooperatives due to social community pressure they mentioned that they are well taken care of with their children abroad hence remittance received cater for all their expenses. However, none of the respondents mentioned that they joined the cooperatives for diet improvement this showed that when community members joined the cooperatives, they were not concerned about diet rather they were more concerned about monetary profits.

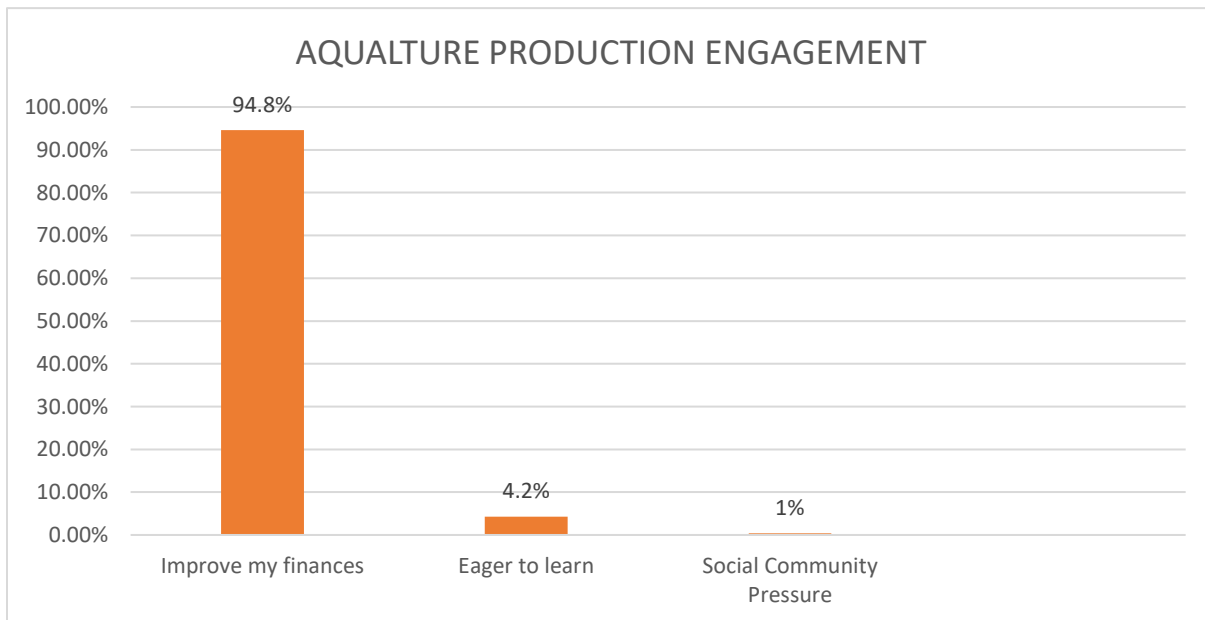


Figure 4 Respondents motivation to join aquaculture cooperatives (Own computation 2022)

6.2.1 Land Ownership

On land ownership most married female members in the cooperatives interviewed indicated that 65% of land belong to their husbands and these women do not possess any land of their own. Other cooperative members in the district as indicated by the results acquired their land through inheritance with 22%. They either inherited the land from parents, grandparents, and late husbands. 14% of the members bought the land through Traditional leaders. 6% of the members migrated from other district and resettled within the area while 1% rely on community land which they call mubatanidzwa and only 3% indicated that they are renting land for agriculture activities. The respondents however gave a complaint on land issues saying the land they possess is not enough to cater for all their farming activities though they have received trainings on land use from Government agriculture extension officers on farming methods like pfumvudza. Pfumvudza is a crop production intensification approach under which farmers ensure the efficient use of resources (inputs and labor) on a small area of land to optimize its management (FAO 2018).

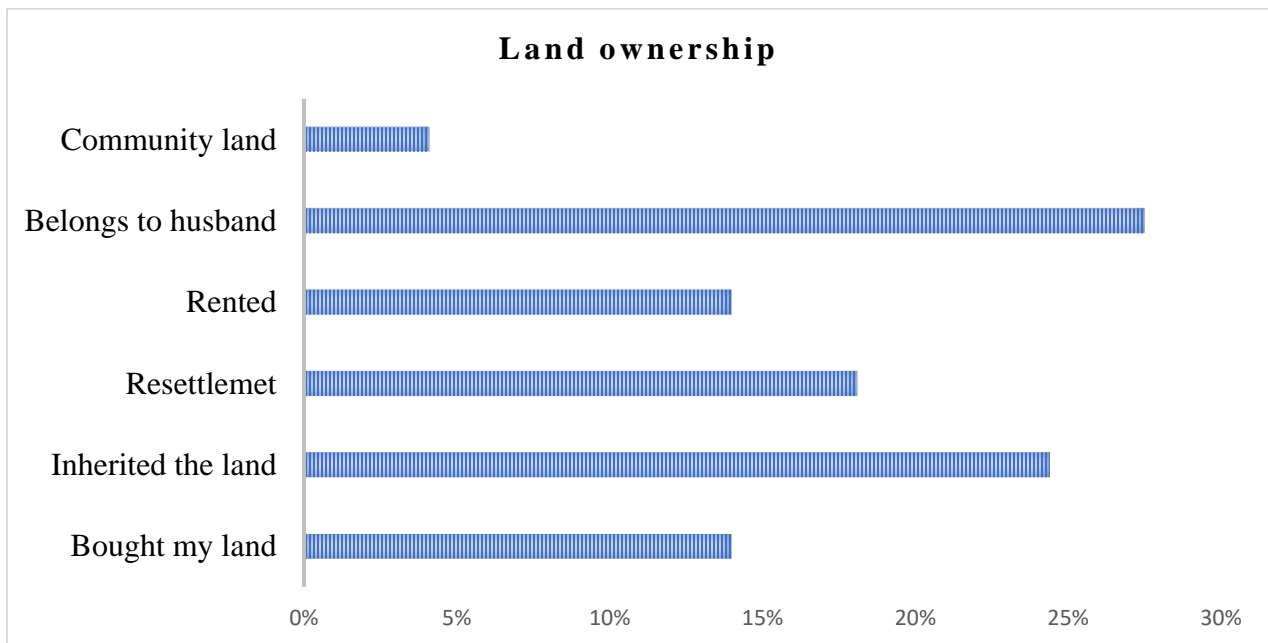


Figure 5 Land distribution

6.2.3 Aquaculture profits and expenses.

Cooperative's members were asked about their profits and expense associated with aquaculture production. The range was from 0-100 usd, 101-500 usd, 501-1000 usd and 1001-more. On profits

93.1% responded that they gain 0-100usd and they get the profits through selling fingerlings which they sell at 100usd for 1000fingerlings and when they harvest, they sell a kg for 4us, and they usually share profits after 2months each member getting less than 100us. Other respondents who constitute 6.9% are getting money from 1001-500usd these cooperatives members are the ones involved in Integrated Agriculture Aquaculture (IAA). They combine vegetable gardening, poultry, and fish farming. On expenses 93.1% responded that as a cooperative they buy fish feed from starter to growers from 0-100usd per month. 6.9% members who are engaged in IAA will then add extra money from the 101-500usd per month on chicken feed, pesticide, and transport cost to the city to sell their products.

How much gain in profits

Responses (USD\$)	frequency	%
0-100	217	93.1
101- 500	13	5.6
501-1000	3	1.3

Table 6 Aquaculture profit

How much spent (expenses)

Responses (USD\$)	frequency	%
0- 100	224	96.1
101- 500	8	3.4
501- 1000	1	4

Table 7 Aquaculture expense



Figure 6 Fish harvest at Mugwisi Aquaculture Cooperative (2021) picture taken by the author)

6.2.4 Lack of market

The study showed that lack of market is another challenge that cooperative members experience. The local people are the only buyers the reason being that they do not have refrigerators to store their fish after harvest since fish is a perishable food. Also, they are not able to sell their fish to big supermarkets like OK and Pick n Pay as the supermarkets requires large quantity which can only be achieved by Lake Harvest. This is ascertained by Velu et al. (2009) that, subsistence aquaculture in Zimbabwe is limited to a few pond-based enterprises while the commercial sector is monopolized by Lake Harvest Aquaculture (Pvt) Ltd which produces fish for domestic consumption and exports. The respondents are engaged in small scale farming leading them to have local people as their only buyers. This is in line with Malapit et al (2019) who notes that self-sustainability of fish farms can only be achieved in regions with an existing infrastructural basis for fish farming, such as access to markets, administration services and institutional help thus promote small scale fisheries.

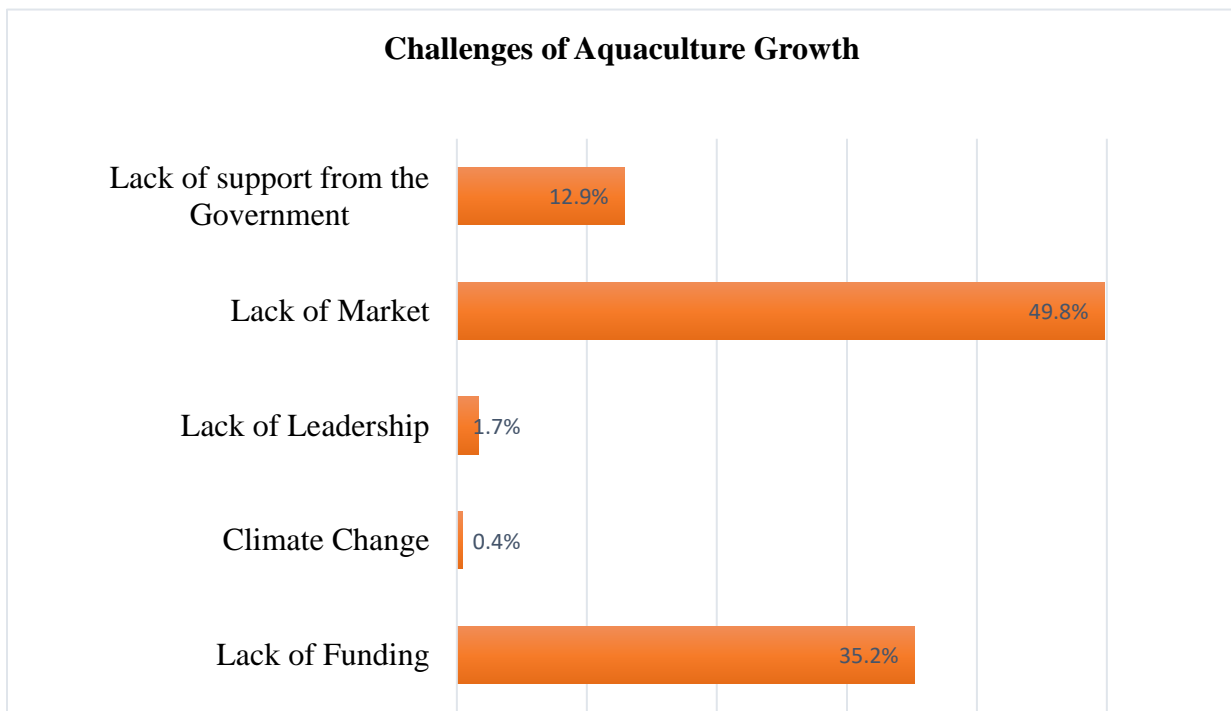


Figure 7 challenges of aquaculture cooperatives (Own computation 2022)

Moreso, the respondents complained that the projects are lacking funding. Their argument was that when the project was first introduced the donor gave them everything from working tools and

all building materials. They were also given fish feed for 2 years once the project ended the donor never came back and gave them financial support. This shows a sense of dependency syndrome. The community was given capital, but they still seek funding after 2 years of being fully funded while getting profits. Chazovachii et al (2017) noted that vulnerable recipients tend to be more dependent on hand outs and in the process they lose the ability to improve their standard of life. This donor dependency syndrome contributed to the collapse of the 3 cooperatives.



Figure 8 Deserted fishponds at Tafara Aquaculture Cooperative



Figure 9 Functioning fishponds at Sekenende Aquaculture Cooperative

6.3 Social women Economic Empowerment

Gaining enough control and confidence to change how the society is socially constructed, is part of social empowerment which include institutions and the social roles assigned to members of the society (Lecoutere 2017).

6.3.1 Decision making

The cooperatives members were interviewed on issues concerning decision making and responsibilities. They had to respond if men or women or both are entitled to decision making and household management responsibilities. On the question who has the right to make decision in the family 93.6% answered both while 6.4% answered men none answered women. On the question who has the right to buy or sell major house equipment's 89.7% responded with both, 9% answered men while 1.3% answered women. Most married women in the cooperatives responded that they are not able to make economic decision without the consent of their husbands since their husbands contribute much to providing for the family and cater for all the households' expenses. Women's

requirement to be empowered is that employment must be meaningful and gainful. Whether and how much women work in the labor force is one indicator of WE. When women can earn money, they do not depend on their spouses' income and in the household, they have better bargaining power. (Gemma et al 2013) found that firms owned by women were at a commercial disadvantage because of pressures on them to priorities family responsibilities over their entrepreneurial career.

Table 8 Ability to make decision making

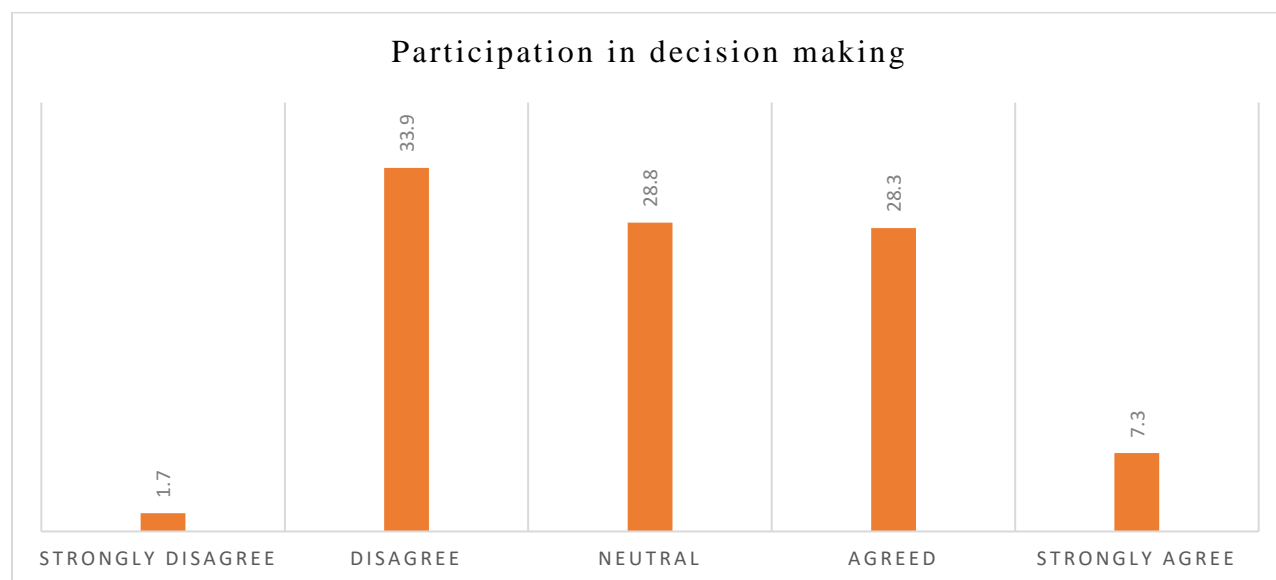
Responses	Frequency	%
Strongly disagree	17	7.3
Disagree	66	28.3
Neutral	67	28.8
Agree	79	33.9
Strongly agree	4	1.7

Own computation 2022.

Household Management: On the question who is responsible for Household Management 88% replied with both,6.9% responded with men while 5.2% believe women are the best candidates when it comes to household management, they believe in the Shona saying *Musha mukadzi* meaning a woman is the pivot and the crux of the home and in the Ndebele saying *umfazi kalankosi* meaning a woman can advise even kings. *Musha mukadzi* and *umfazi kalankosi* are metaphors created by African Traditional Religion (ATR) on African values on women reflecting African ethos and it is believed that “a home is, because of a woman” (Tsikata 2014).

Participation in community development decision: the cooperatives members where asked if their participation in decision concerning community development has increased over the last 3 years 79 (33.9%) disagreed, 67 (28.8%) were neutral, 66 (28.3%) agreed, 17 (7.3%) strongly agree and when further probed on their answer they illustrated that they are village committees that were established by EMA in collaboration with traditional leaders in safeguarding the environment through the Community Based Natural Resource Management (CBNRM) theme while 4 (1.7%) strongly disagree.

Figure 10 Participation of women in decision making in the community.



Own computation 2022.

6.3.2 Education

There is high literacy in terms of the reading and writing as indicated by the distribution of the highest academic qualification as only about 1.3% of total population indicated that the respondents did not attend any formal school. 16.3% of the respondents had gone through primary education, the highest of the population sample 67.4% indicated to have received some form of secondary education while 15% indicate to have obtained a university education or a diploma certificate. The analysis showed that 98.7% of the cooperate have attended school.

Table 9 Education qualifications

	Primary school	Secondary	Tertiary school	Never attended school	Total
Male (1)	8	51	16	2	77
Female (2)	30	104	18	4	156
Total	38	155	34	6	233

Own computation 2022

Of the interviewed people, most women are literate and educated with only 6.24 % as never attended school. In this regard it evident that most of the women went to school which is one of the critical basic needs in the women empowerment process.

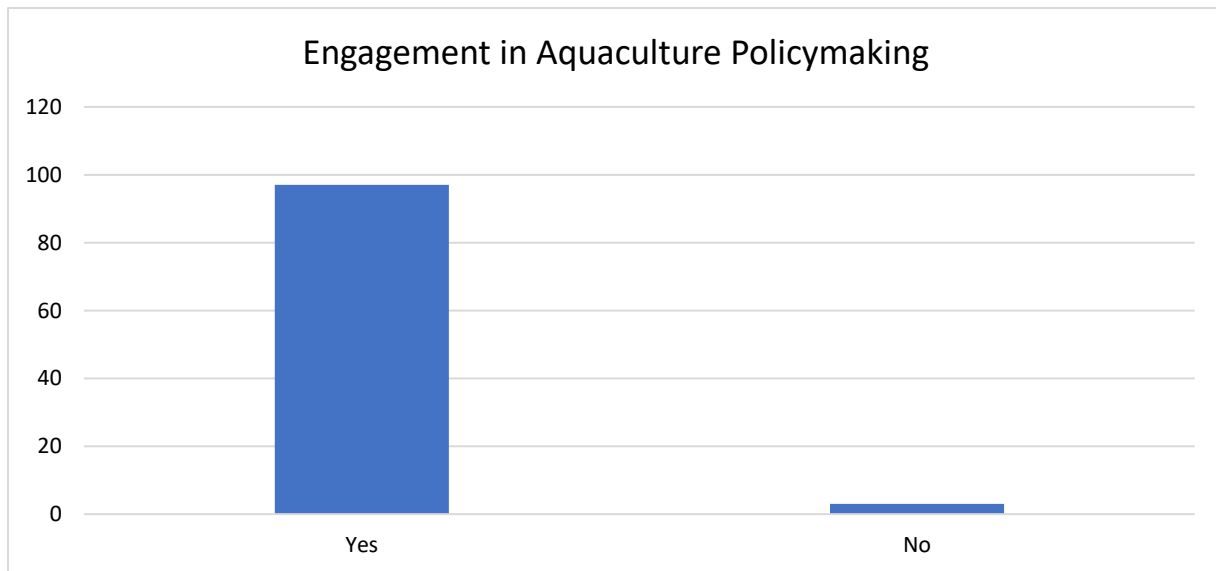
6.4 Political Women Empowerment

Process of transferring resources, capabilities and positions to those who do not have it is vital in political empowerment. Political empowerment requires inclusion in democratic decision-making processes (Akter 2013).

6.4.1 Access to information and skills

Aquaculture Policies: Figure 7, illustrates the involvement of aquaculture farmers in policy making. Only 3% were involved in the process of policy making while the majority 97% are excluded yet they are the ones involved in the production of aquaculture.

Figure 11 Involvement in aquaculture policy making



Own computation 2022

Knowledge on climate change: on the issue of climate change respondent were asked about the impact of climate change on their aquaculture production 64.4% agreed to the notion,35.2% they are not sure while 0.4% disagreed. However, when the cooperatives members asked if they have

much knowledge on climate mitigation strategies 51.5% said yes and they illustrated that they know the strategies through Indigenous Knowledge System (IKS) passed to them from their forefathers and they also received training from conservation agencies on the impact of climate change on aquaculture. However, 46.4% responded with maybe while 2.1% responded with No, they do not possess any knowledge on mitigation strategies.

Aquaculture Training: On the issue of aquaculture training when the Donor first introduced the project to the community in partnership with Government stakeholders and Conservation agencies they trained and educated the cooperatives members on aquaculture production making 93.6% of the members well equipped with knowledge and skills and 6.4% did not receive the training reasons being that they were not available during the training workshops and others joined the cooperatives at a later stage when all the training workshops were already taken place. 60.8% of the training were conducted by Non-Governmental Organization which is Aquaculture Zimbabwe, 33.5% was done by the conservation agencies Environmental Management Agency and the National Parks of Zimbabwe while 5.3% was conducted by Government through their Agriculture Extension Officers under the Department of Livestock and Production while 0.4% was conducted by a Private Agency called Lake Harvest which is the largest private sector that deals with Kapenta and fisheries production in Zimbabwe.



Figure 12 AQZ staff training Topora Cooperative members (picture retrieved from AQZ gallery 2020)

6.4.2 Leadership

On leadership roles the respondents were asked their opinion on women having the ability to be leaders in cooperatives. The respondents had to answer Yes, No or Maybe. The table below illustrated that 190 (81.5%) answered yes, 42 (18%) were not sure if women have the ability even women answered maybe. This illustrate that culture and norms, or gender equality issues are not fully affecting women empowerment but lack of exposure and confidence in some women make them doubt their own leadership abilities. However, 1 male member aged 61 answered No (0.5%) and he believed in the old traditional values and norms that forbid women to stand in front of men.

Table 10 women ability to leadership roles

Variable	Description	Frequency	%
Women leadership	Yes	190	81.5
	No	1	0.5
	Maybe	42	18

Own computation 2022

6. Logit Regression results

The study showed different factors that affects WE through aquaculture cooperative's which serves as the final research question for this study. Logit regression was used to analyse objective three which focuses on constraints that hinders WE in aquaculture cooperatives and household management. The study showed that decision making, primary income and aquaculture trainings have significance in promoting WE .

Table 11 Logit regression of constrains affecting WE

Variables	B	Std. Error	Beta	T	Sig.
Education Qualification	-.244	.102	-.158	-2.398	.017**
Age	-.005	.007	-.052	-.748	.455
Marital Status	-.070	.089	-.054	-.788	.431
Household size (number)	.025	.032	.051	.782	.435
Land Ownership	-.032	.041	-.054	-.794	.428
Decision making	-.376	.160	-.179	-2.346	.020**
Access to information and skills	-.704	.258	-.175	-2.733	.007***
Aquaculture as a livelihood	.097	.031	.196	3.119	.002***
No access to credit	-.092	.112	-.062	-.824	.411
Culture values and norms	.117	.122	.076	.960	.338

*** significant at 0.01, ** significant at 0.05. Own computation 2022

Decision making

Zimbabwe is a patriarchal society where men dominates in resource ownership though women can utilize the land but cannot own it, also men dominates in decision making. They hold the final say even in household management (Ndanga et al 2013). The study looked at decision making as one of the processes of the aspects of women empowerment. According to the results obtained, it showed that the majority for the cooperatives members believes both women and men have the right and ability to decide about households' expenses or any decisions related to family. They also illustrated that those married should sit down with their partners so that they discuss and plan

together and by doing this they will be able to do what is best for the family. Also, they pointed out that we are now living in the 21st century hence we should change with time. The 21st century has promoted the empowerment of women in every angle of life. One male responded that even in African politics women are now becoming Presidents. From all these decision-making questions it indicated that, the majority members of the community believe in gender equality when it comes to decision making and household responsibilities issues therefore promoting women empowerment.

Access to information and skills

Access to information and skills was also positively significant with respondents choosing the cooperative outlets as with more training, farmers realized the benefits of using the cooperative as a marketing outlet. This is also a product of the respondents being educated and therefore easy to train. Farming cooperatives provide trainings for farmers through field visits, field days, training workshops and other related activities. Access to training also positively affect the cooperative outlet in a study of marketing choices of fish farmers in Ethiopia done by Chagwiza et al (2016) and there were similar results in other studies done by Duflo (2011) and Genshick et al (2018). Technical support contributes to the sustainability of aquaculture, the high level of support and the technical service offered by Stellenbosch University to the trout farmers in the Western Cape was identified as a key factor to the continued success of fish farming which have increased production by 5% (Pradhan et al 2018). This concurs with Akter (2013) who noted that information to policy and governance are the key elements required to promote the economic efficiency, ecological integrity and social equity that make up sustainable livelihood. Introducing aquaculture to rural communities is a strategy which also promotes women empowerment. The government of South Africa worked with donors trained the community on sustainable aquaculture in Mpumalanga, where the weather and environmental condition is suitable for the project, this helped to increase the livelihoods of the rural people in the province by 16% (Pradhan et al 2019). As result institutions should help the aquaculture sector by coming out with strategies to promote sustainability of aquaculture, hence promoting rural livelihoods.

Aquaculture as a livelihood

Most people in the cooperative joined the aquaculture cooperative for financial benefits and aquaculture is a side hustle since it does not cater all their household expenses. Most married women in the cooperatives mainly survive on money and groceries send by their husbands who have migrated to South Africa and Harare. This made most married women to join the cooperative they are argument was that they do not want to be fully economically dependent on their husbands. Some studies done in Zimbabwe referred women who depend on their husbands for money as “broilers” or “home defenders” (Chatiza 2019), denigrating terms that suggest they just stay at home expecting their husbands to financial take care of them. One female responded that although we do not gain much from the cooperative. One female member added that when they share profits the after harvesting, they can buy sugar or even buy books for their children as a result, though aquaculture do not fully cater for all the household expenses it somehow economically empower married women by not making them fully rely on their husbands for money.

8. Discussion

Zimbabwe is a patriarchal society just like other African countries. Societal norms and values still hinder the progress of WE despite feminist activists and organizations including UN struggle to promote gender equality. The study analyses the constraints faced by women in achieving WE through aquaculture cooperatives. The study categorized Kabeer (1999) WE framework indicators in three sectors thus economic, social and political.

Table 12 Overview of WE indicators and their category

Empowerment Domain	Identification of WE principles variables	Category
Resource (access)	Land ownership	Economic
	Access to Information (aquaculture policies, training on aquaculture production and climate change)	Political
Agency(decision-making)	Engagement in the aquaculture production	Economic
	Ability to contribute to Decision making	Social
	Household management responsibilities	Social
Achievements(Outcomes)	Involvement in Aquaculture Policy making	Political
	Women leadership	Political
	Aquaculture Profit	Economic
	Economic Freedom	Social

Own computation inspired by Kabeer (1999)

For Kabeer access to resources included the material, social and human property and future expectations and claims in the Framework (1999). The study showed that land hinders women empowerment for those in the aquaculture cooperatives. All the married women in the cooperatives do not own any land. The land is owned by their husbands even though their most of their husbands do not reside in the rural area. This is in line with other studies done that showed that in customary law, the male head of the household is the one who is recognized as the holder of the land. This precludes women from holding primary land. Also, this affected greatly to single and divorced women (Chazovachii et al 2017).Ndanga et al (2013) notes that, social structures has created a systematic oppression on women. A patriarchal society expects women to producer and

reproducer, to be able to go to work and come back home and take care of domestic responsibilities. The indications of this systematic censorship can be observed in women's unequal opportunities to enjoy rights, goods, and resources (Gemma et al 2013; Malapit et al. 2019). However, the study noted that out of 10 cooperatives registered by AQZ, 3 cooperatives cease to exist due to donor dependency syndrome and corruption among the leaders. The fishponds and hatcheries were deserted by the cooperative members and most of the members are now concentrating on other livelihoods such as farming and casual labor. This was also noted by Shava & Gunhidzirai (2017) in their study in Chivi district in Zimbabwe where aquaculture projects collapsed soon after the donor handed over the project to the community, this raised questions about borrowed livelihoods initiatives and their capacity for sustainability and resilience among communities.

The study showed that most respondents are educated. Most people in Zimbabwe acquired formal education which starts from primary education though some will not advance to Tertiary level. For Kabeer (1999) access to education, skills and information are among resources that women need to acquire for her to be empowerment. A study done in Uganda showed that women are most affected when it comes to issues of education. Most women in aquaculture cooperatives in Uganda have little level of education than men (Lecoutere 2017). However, as the educational level of respondents increases, they gain the ability to interpret and understand market information (improve predictive power) and the ability to adapt to new farming methods. Farmers with a better level of education also understand the benefits of economies of scale found through marketing in a cooperative and are therefore more patient and willing to wait for the right buyer (Duflo 2011; Pradhan et al 2019; Veliu et al 2009).

A woman is empowered when she can make her own decisions. Kabeer (1999), asserts the is need for women to make their own decisions be it about their body, marital issues, or household issues. This study revealed that though Zimbabwe is a patriarchal society where male dominates in decision making, women in the cooperative have the right and ability to contribute to decision making be it in the cooperate or at home. According to the result ,it showed that over the course of time in the project seem to indicate that they have increased their decision-making capacity which reflects confidence, transformation of choices into desires, leading by example and knowing their wort. This could be a reason why the women stay in the project, as an indirect benefit.

However, in other studies done on women and decision making in a patriarchal society result obtained, results were different from those obtained by this study. Other studies showed that for traditional patriarchal reasons, women are not readily accepted as entrepreneurs running and managing an enterprise (Genshick et al 2018). The patriarchal system of social structures and practices allows men to dominate, oppress and exploit women (Tsikati 2014), the system has affected women's motivation achievement and has created barriers to female entrepreneurial success. The upbringing of women in the patriarchal society makes them subconscious resistance in taking opportunities (Lecoutere 2017).

Achievement is one of the variables Kabeer (1999) framework consider as part of women empowerment. The study showed that even though aquaculture profits does not cater for household expenses its little contribution has significantly empowered women as a livelihood. Women can use the profits to buy their undergarments and menstrual pads and that of their female household members. They no longer wait for their husbands to cater for their basic needs. Though according to Ndanga et al (2013), Livelihoods refer to practices by which individuals or groups strive to make a living, meeting their consumption necessities, coping with adversities and uncertainties, and engaging in new opportunities in accordance. Integrating Aquaculture with other agricultural activities has helped in raising the profits. As noted by Machena and Moehl (2001), the integration of aquaculture with crop farming and livestock production has the potential to increase the overall farming production system. The beneficiaries are practicing land –based aquaculture and are integrating in with other agricultural activities. This has helped the beneficiaries in the cooperatives as it increases the nutritional levels, food security and household incomes. This is also shown by the benefits obtained through aquaculture which has helped significantly to women empowerment.

Finally, Women Empowerment is complex and there is no unified approach of measuring this dynamic value. As a result, there are other dimensions of WE that valuable and be used for further investigations which include psychological and physical dimension.

9. Conclusion

Women in developing countries often face different difficulties in access to information, education, financial sources, paid job, sufficient income, decision-making or land right. These inequalities between men and women are often caused by historical and cultural habits where women are marginalized. Though UN Women, UN and World Conference on Women try to break these old habits through SDGs. Those activities improve the position of women worldwide, they are focused on promotion of gender equality and empowerment of all girls and women on the world. However, although NGOs and donors try to empower women in the rural areas through development projects, they tend to impose the projects on the vulnerable communities without consulting them first this was proved by the 3 cooperatives which collapsed when the donor withdrawn their financial support. There is need for Participatory Rural Appraisal Approach (PRAA) which enable the community to share their ideas on how best they can achieve a sustainable livelihood and they will be able to decide how they can do it at the same time achieving a common perspective on natural resource management and agriculture.

The Government is lagging behind in promoting rural activities that can empower women and help them fight rural poverty. There are no adequate resources needed to promote sustainable livelihood like electricity, construct roads to promote social networks. Also, it should also support self-organized, local professional organizations and cooperatives, as these arrangements strongly contribute to foster the integration of small-scale operators into markets. National and regional agencies like Agritex officers responsible for fisheries should give high priority to the support of small-scale fisheries through adequate planning, legislation and the recognition or allocation of rights and resources. Where small-scale fisheries are in competition with larger-scale operations, governments should promote the former's contribution to food security and nutrition and develop national policy regulations that protect small-scale fisheries. Moreso, large potential contribution of aquaculture is unappreciated and ignored by most agricultural and rural development professionals and policy makers. Only then would its potential to contribute more towards elimination of poverty have better prospects of being realized.

Cooperatives seems to be a good opportunity for women to become a leader or get other position in the cooperative leadership. Women and men perceive the importance of female presence in

leadership. Through this opportunity previously shy woman become a confident leader who take this responsibility and lead and represent the cooperative in the wider community. Most of the respondents joined Aquaculture for economic purposes ,however aquaculture does not cater for all household expenses making them involved in multi livelihoods. Majority members of the community believe in gender equality when it comes to decision making and household responsibilities issues therefore promoting women empowerment.

10. Recommendation

The study noted some loopholes in the aquaculture sector and constraints that affect WE process. Below are the recommendation that might help in empowering women through aquaculture production:

- Full participation of women should be encouraged to achieve improved development of aquaculture.
- Need of participatory rural appraisal approach by donors and the Government before starting a project for the vulnerable community.
- The country's government must enforce new policies and rights that would affect women and girls.
- Governments to measure and publicly report on progress to achieve gender equality.
- Institutions, policies, and process should make fish an integral element in inter-sectoral national food security and nutrition policies and programmes with special regard to promoting women empowerment.

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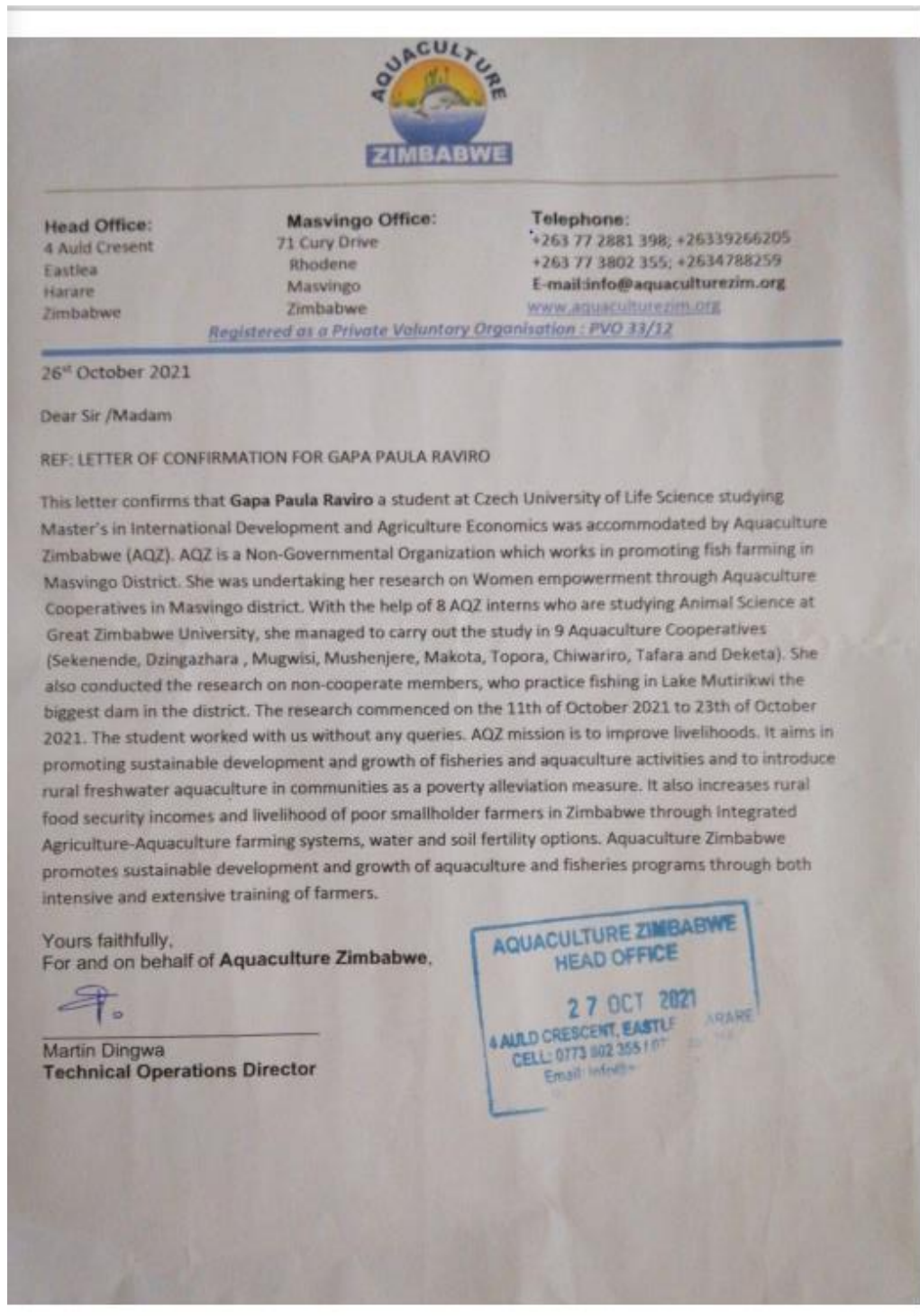
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12. Appendices

List of appendices

Appendix 1: Confirmation letter for research partnership



Appendix 2: Questionnaire

Section A. Household and characteristics

	Tick relevant box			
1. Gender	Male		Female	
2. Age range				
3. Highest academic qualification	No school	Primary	Secondary	Tertiary
4. Marital Status	Married	Divorced	Widow	Single
5. Household size				

Section B. Economic Dimension

6. Primary Income					
Casual labor	Remittance	Aquaculture	Civil Servant	Business	Other (Specify)
7.What inspired you to engage in the aquaculture production	Improve my finance	Improve my diet	Eager to learn	Social community pressure	
8.Does Aquaculture cater for all household expenses		Yes		No	
9.How much do you gain from Aquaculture (Profit) USD	0-100	101-500	501-1000	1001 and more	
10.How much do you spent on Aquaculture (Expenses) USD	0-100	101-500	501-1000	1001 and more	
11.What is the main challenge in the growth of your cooperative	Lack Market	Lack of leadership	Lack of funding	Climate change	Lack of support from the Government

Section C. Social Dimension

12.Land ownership	Bought my land	Inherited the land	Resettlement	Rented	Community land
13.Can women be leaders in cooperatives			Yes	No	Maybe
14.Who has the right to make decision in the family			Men	Women	Both
15.Who has the right to buy or sell major house equipment's			Men	Women	Both
16.Who is responsible for Household Management			Men	Women	Both
17.Do you agree that your opportunity to participate in decisions about community development has increased over the last 3 years Not important indicator 1 – 5 very important indicator					
	1	2	3	4	5

Section C. Political Dimension

18.Do you think climate change affects aquaculture production		Yes	No	Maybe
19.Can you say you have much knowledge on climate mitigation strategies		Yes	No	Maybe
20.Do you know any aquaculture polices			Yes	No
21.Have you ever been engaged in aquaculture policy making			Yes	No
22.Have you ever received training concerning aquaculture			Yes	No
23.If yes ,who conducted the training	Government Agencies	Conversation Agencies	NGO	Private agencies
24.Have you heard about any financial and extension support for establishment of cooperatives (from government or NGO)			Yes	No

Section D : Perceived constraints for women empowerment in aquaculture

Rank according to importance. 1 Not important – 5 Very important.					
25.No access to Land Ownership	1	2	3	4	5
26.No access to credit	1	2	3	4	5
27.Lack of Education	1	2	3	4	5
28.Marital Status	1	2	3	4	5
29.Lack of skills and knowledge	1	2	3	4	5
30.Lack of Economic Freedom	1	2	3	4	5
31.Lack of gender equality leadership roles	1	2	3	4	5
Culture values and norms	1	2	3	4	5

Thank you for your cooperation.

Appendix 3. Photo documentation of research data collection



Author interviewing women at Mugwisi Cooperative



The Author discussing with male members at Dzingazhara Cooperative



Fish stocking at Mushenjere Cooperative



Hatchery pond at a deserted cooperative (Tafara Cooperative)



Fish harvesting at Chiwariro cooperative



Members engaged in Integrated Agriculture Aquaculture (IAA) doing poultry and vegetable farming



Aquaculture Zimbabwe training materials



Dzingazhara Cooperative billboard



The author having a discussion with one of the women in the cooperative