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Evaluation of Business Operational Profile and Fish Farm Investment Managerial Performance Index in Akwa Ibom State, Nigeria

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ABSTRACT
This study adopted a mixed-method evaluation approach to analyze the prevalent performance pattern of fish farming businesses in Oron local government area in the Niger Delta region, Nigeria. A multi-stage sampling method was used to collect data from 130 fish farmers through the aid of a validated structured questionnaire. Data were analyzed using descriptive statistics. The results revealed that most of the fish farmers are registered with Akwa Ibom State Agricultural Development Project (AKADEP) and individually driven. Technically competent employees (50%) managed aquaculture firm. Mass entry and exit effects were pronounced as most of the farms (77.69%) could not continue beyond the first five years of business operations. Personal funding (65%) constitutes the main source of financing the business. About 52.31% of the fish farmers engaged the services of some part-time employees in the farm operations and consultants majorly in management decisions and supervisory capacity, thereby leading to an increase in the employment rate of the sector. Fish farmers (77.70%) do not depend on the usage of natural water sources and local feeds (46.92%) and were prevalent among the fish farmers. With regards to the aquaculture investment management effectiveness index, the 5 elements of return on investment revealed between 49.5% to 64.6% index of the firms which affirmed meaningfully rewarding. Four elements of sales growth were equally impressive as the firms' affirmation index ranged between 57.3% and 67.3%. Although the proportion of firms with a low FFIME index is relatively substantial. Improvement in the adoption of the concept of FFIME could promote rewarding and sustainable economically viable fish farming business.

Keywords: Fish farming, Business, Investment, Management Performance

INTRODUCTION

Fish farming remains a viable business venture with a capacity for mitigating socio-economic, malnutrition upheavals confronting developing economies. This fact is the allure for aquaculture investment, as it is been acknowledged and encouraged by the government as a novel entrepreneurial window, culminating in its eventual uptake or setups (startup) by farmers as a business enterprise Okwo (2011). It comes in different scales ranging from homestead to commercial firms and conducted for several decades, but how remarkable has been its returns. This notion probes the profitability of aquaculture investments and based on empirical literature it is often in the affirmative that it is profitable. Profitability and investment longevity had always been the salient motive behind any business enterprise startup, but such ambition is inherent with inhibiting factors that stem from the operating business environment. The operating business environment is composed of influences or determinants that impact the investment life or at its conception, conventionally categorized (grouped) into two; external and internal. The external environment induces structural adjustments for business adaptation, while the internal environment sets the pace for structural adjustment and adaptation.

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Fish farming like any other business venture is vulnerable to ecological impact, poaching, technological innovations, and state of physical infrastructure, (Solomon and Inyang, 2007). This scenario awaits a resilient internal environment response and good management and technical skills to cushion the adverse effect (impact) and strife towards attaining the prominent business motives. The internal environment focuses on the effective managerial procedure adopted by the aquaculture enterprise that would improve efficiency and enhance operational performance against constraints imposed by the external environment, it is considered as a strategic determinant in aquaculture investments profitability performance status.

Business operations in aquaculture entail processes that facilitate production activities that are decision driven in important areas such as; physicochemical, business/economic, and managerial (Krause *et al*., 2015). Successful fish farming investment decisions such as physicochemical decisions, fish production systems, level of intensity are generally linked to the level of inputs and stocking density (Dumas *et al*., 2001).

Decisions modern businesses are driven by a strategic plan to provide the guide for management activities. The extent to which the aquaculture business is oriented by the strategic business plan to realizing the business motive of the enterprise still a subject for robust investigation. Thus, the production feasibility report will show the relationship between cost and the expected revenues, the financial feasibility analyses, the cash flow forecast beyond a specified period, investment risk mitigation plan, and farm records keeping competency. The managerial decision provides the discretional pathway for the efficient utilization of farm resources, material inputs, finance, and labor by the farmer or farm manager. However, business ownership structure could implicitly influence the managerial decision and business prospects as it relates to accessing funds for expansion and business succession plan, most specifically where fish farming enterprises are predominantly sole-proprietorship.

Fish farming businesses are diverse in kinds and it is part of the advocacy to mitigate the rising unemployment tide in Nigeria, Inyang and Solomon (2007), Adetunji (2011), Inyang and Udong (2013), and insufficient protein supply gap, which that necessitated the identification of Aquaculture as a potential source (Solomon and Inyang, 2007; FAO, 2010).

There had also been some efforts to develop systematic approaches to aquaculture in Nigeria in terms of technological innovation and adaptation to meet changing and challenging requirements (Albert *et al*., 2014). Aquaculture firm like any business aims at making a profit for continuous investments and its effectiveness is very paramount. The analysis of the enterprises is often used to show the level of cost, return, and profit that accrues to the fish farm. The profitability of each option (differences between the total revenue and total cost of production) is determined to show the strength and weakness of any aquaculture system (Amos, 2000). The ratios serve different purposes on the farm, for instance, if a fish farmer uses labor on a hired basis, the rate of return on operating cost is very essential. These indications are useful both for fish farmers and other stakeholders in the fishing industry (Bolorunduro, 1996).

For any sound decision to be made based on a good analysis of records and data on the farm is necessary, the role of management in the aquaculture business is central to the success of any business enterprise. Therefore, materials and money business involve the integration of manpower, materials, and money in a judicious way, such that anticipated profit can be assumed. In the aquaculture business, the market has a key role to play in the management decision on any aspect. Also, good physical conditions that are required for fish to grow well under culture are prerequisites to a successful enterprise. Topography, soil structure, regular water, and security issue are important (Primevera, 1989). In some low-scale aquaculture, record keeping can be quite challenging and in assessing the investment performance, several measures are adaptable, thus, application of multidimensional scaling approach based on indicants of return on

investment and sales growth becomes most imperative especially where record-keeping is characterized by some level of inconsistency.

In a related study (Rahman *et al*., 2019) investigated the impact of management practices and managerial ability on farm financial performance of aquaculture farms and used multiple regression (econometric model), 12 variables of management practices were identified; formal business plan, financial statement (accounting practices), management team meeting, transfer of management to family, operating budgets, adoption of new technology early, adoption of new technology later, non-adoption of technology, culturing, feed conversion ratio, and culture period. Four variables out of 12; formal business plan, accounting practices, operating budget, and feed conversation, were statically significant and impacted on financial performance indicators in all of the four models; gross margin (profitability), revenue (liquidity), yield (productivity) and returns on land(solvency). Managerial ability impact on the financial performance of aquaculture reveals that years of education had a significant positive effect on yield, while other variables: years engaged in fish farming, formal training in fish farming, frequent contact with fisheries officers, had a positive impact on revenues/yield, gross margin ratio, returns on land respectively, while income not related to farm recorded a negative impact on yield. Thus, the study concluded that to improve financial performance more attention be given to basic business management tools, such as business plans, budgets, and accounting practices.

Although managerial practices/ability is imperative to aquaculture investment returns but addressing operational constraints would positively impact enhancing investment returns and profitability. Akegbejo-Samson and Adeoye (2012) highlighted several constraints in aquaculture operation: poor management and the high price of fish feeds was conspicuous as major challenges representing 60-70% of the variable cost component of the simple profit and loss calculations adopted in the study to ascertain the viability of the venture, theses operational constraints may have contributed to the low net return of investment at 1.05.

Mkong *et al*. 2018 adopted net profit analysis and cobb Douglass function to assess profitability/factors affecting profitability, the study showed that profitability was significantly affected by the price of fingerlings which exhibited an inverse relationship with net profit; were 13% decrease in net profit ($p<0.01$) was as a result of a unit increase in the price of fingerlings. Price of feed and cost of labor significantly affected profitability but exhibited a positive (direct) relationship with net profit; where a unit increase in the price of feed leads to a 0.94% increase in net profit ($p<0.1$) and a unit increase in labor cost lead to 0.49% increase in net profit although significant at 1% and contrary to a *priori* expectation it implies that quality labor could affect output and subsequently profitability. Other determinants; experience and transportation cost had no significant effect on net profit, the study highlighted that profitability can be enhanced to facilitate fish farmers' capacity on how to make fish production and marketing cost-effective and is profitable.

Assessment of performance of fish farm enterprise is often based on profitability and also the use of traditional economic models and benchmark models such as technical efficiency and enterprise budget analysis respectively (Coell, *et al*., 1996; Anderson *et al*., 2015). Scarcely, do performance assessment focuses on aquaculture business operations which depict effective decision-making disposition of the manager deploying basic business management functions of planning, implementation, control, and evaluation (Bloom and Reenen, 2010). This gives an insight into the imperativeness of effective management viewed by (Boyd, 1999) as the procedure for improved efficiency that enhances environmental and social performance. Also, as a strategic means for enhancing investment returns is subject to the farm's characteristics. Thus, the study purposefully evaluated the business operations profile and returns on investment by adopting a sociological and economic approach in Akwa Ibom State, estimated and decomposed the performance management index of each farm were specifically analyzed the fish Farming

investment operational profile, years in aquaculture business and profit profile will further highlight the impact of business operations on investment returns.

The rationale of aquaculture enterprise is based on profit maximization, and is set to be achieved through the farm operations efficiency/effectiveness which is a function of managerial decision making, revealed through managerial ability or dexterity (creativity/innovativeness) and best management practices. Management practices are the actions of a manager (farmer) regarding the attainment of long-term and current objectives at optimal utilization of available resources (Makinen, 2013). This will depend on the managerial ability of the farmer or manager when armed with sets of attributes deployed to solve day-to-day problems and exploiting opportunities to make gains.

Based on the foregoing analytics, the fish farming performance approach had been predominated by financial indicants measure but the recent paradigm shift has adopted utilization of multidimensional approach to gain insight of the strength and weakness of practices that would provide holistic answers to organizational performance effectiveness. The study conceptualization sought to address concerns of suboptimal operation of aquaculture business in Nigeria. Of course, when business units are predominated by a low-scale sole proprietorship, evaluating how friendly are there to modern business best practices will reveal the extent of advisory services support the attainment of resource use efficiency in production and economics of fish farming. With an increasing level of literacy level of fish farmers, how are the current fish farming business demographics in the study area? Can the socioeconomics dynamics of the practitioners hold a high prospect for fish farm investment managerial performance? Therefore, this study was designed to explore the prevalent fish farming investment managerial performance index in the study area. Specifically, the fish farming business profile was mapped, alongside the fish farm operational profile, and fish farm investment managerial performance indexes were ascertained.

METHODOLOGY

The study was conducted in Oron Local Government Area in the Niger Delta region within the territorial boundaries of Akwa Ibom State. It has an area of 70 km^2 and a population of 156,461 at the 2006 census. It lies between latitudes 4°32′N and 5°33′N, and longitudes 7°25′E and 8°25′E.

Fishing, fish, and crop farming predominate the main economic activities due to fertile soil and the riverine nature of the environment. According to the results of a survey conducted in 2019, about 7.3 percent of households in the South-South Zone of the country participated in fish farming activities, the largest share nationwide Simona Varrella (2020). Oron is in the tropical region and has a uniform temperature all year-round. The two main reasons are the dry and rainy seasons. The dry season spans between October and April and the wet season starts around May and ends in September.

Sampling techniques

A two-stage sampling technique was adopted, at the first stage, random sampling was used to select five (5) communities in the study area out of 36. At the second stage, a simple random sampling technique was used for selection based on a list of fish farmers obtained from the Akwa-Ibon State Fisheries Department. Twenty-six fish farmers were selected from each community, thereby making the sample size of one hundred and thirty (130) respondents. A validated structured questionnaire was used to generate primary data for the study. and the data sure subjected to frequency counts, incidence, and composite indexes.

RESULTS

Fish farming Business Profile

Sole-proprietorship is the predominant business ownership structure in the study area, constituting 77.68%. While 69.23% of the fish farming businesses operate as a legal entity (Table 1). The proprietor (50%) personally oversee their fish farm while others (50%) employed skilled farm managers to manage their fish

farms towards boosting profit returns. Most of the fish farms (76.92%) do not belong to any cooperative society. Extension service support enhances the farmer's production and business management capacities thus 33.8% receive the service, while 66.7% of respondents did not access extension service (table1).

Table 1: Distribution of respondents based on fish farm Business ownership profile

Ownership Profile	Yes		No	
	Frequency	%	Frequency	%
Are you the Sole Proprietor (Owner) of the Farm?	101	77.68	29	22.32
Is your farm operating under a legal entity?	90	69.23	40	30.77
Do you have a farm manager on your farm?	65	50.00	65	50.00
Do you belong to any cooperative society?	30	23.08	100	76.92
Do you receive extension service support towards production?	44	33.08	86	66.92

Fish farm operational profile

Table 2 shows the distribution of respondents based on years of practice in the fish farming business. The majority (77.69%) of respondents had to spend 1-5years, followed by 20.77% of respondents with 6-10years and 1.54% representing 11years above in the business. Source of financing of fish farming was still dominated by personal incomes from the owners and support from household members and relatives. Corporate or formal sector funding support was minimal in its contribution to Aquaculture investment in the study area. As shown in table 2, it can be observed that formal to non-formal financial sector investment support is quite low from 19.1% to 81.9%. They were involved in another livelihood that sustains their households, more so operating at small scales.

Table 2: Distribution of respondents based on the fish farming business profile

Parameters	Frequency	Percentage (%)
Number of Years		
1 – 5	101	77.69
6 – 10	27	20.77
11 and above	2	1.54
Source of Capital		
Bank	9	6.92
Family	25	19.23
Personal	80	61.54
Cooperative	16	12.31
Owners Involvement Status		
Full-time	59	45.38
Part-time	71	54.62
Fish Feed Source		
Imported feed	51	39.23
Local feed	79	60.77
Source of Water		
Stream	15	11.53
River	14	10.77
Borehole	101	77.70

Furthermore, table 2 indicates that 61.9% of the fish farmers had part-time staff, 29.2% had permanent staff, while 7.9% had both part-time and permanent staff. The result also shows that 60.77% of fish farmers used local feed while 39.23% used imported feed (table 2). The result indicated that 77.7% of respondents use boreholes as 11.15% used to stream and 10.8% used the river as sources of water.

Fish farm Investment Management Effectiveness (FFIME)

Table 3 explains the situation of the sector's viability and how the businesses are faring in the study area. Profit margin overtime is more than a half of operational capital invested as admitted by about 34.60% of the firms. The firms (36%) admitted that achieving high revenue guarantees a little above breakeven point. Fish farmers whose profit margin is more than half and revenue settle the cost of investment ranked 1st and 2nd positions across the firms. The highest-ranked returns on investment components reveal an index of 0.65 implying that about 64.10% of the farmer's profit margin is more than half of the invested capital. The third component revealed that net profit serves as investment capital for the next trading period with an index of 0.61. The operational overhead cost reduces the net profit of most firms (76.70%) as shown in table 3. Business performances over years that are usually large enough to manage the business portfolio ranked 1st with an affirmative index of 0.68. Firms' ability to cope with the demand of customers in sales growth performance ranked in 3rd.

Table 3: Distribution of respondents based on fish farm investment management effectiveness

Elements of Fish farm Investment Management Effectiveness	NA (%)	Less Times (%)	Most times (%)	Utmost (%)	FFIME Index and RROP
Return on Investment					
My profit margin overtime is more than a half of the capital I have been injecting into the enterprise	7.7	27.7	34.6	29.5	0.65 1st
My revenue most times settles the investment cost, leaves behind much as net profit.	5.3	30.7	44.5	21.3	0.640 2nd
My net profits are usually large enough to expand my business portfolio.	10.2	36.0	37.5	17.7	0.552 4th
My net profit most times serves as investment capital for the next trading period.	4.7	31.0	44.2	16.9	0.611 3rdi
Operational overhead cost reduces our net profit	11.6	39.6	38.8	10.7	0.495 5th
Sales Growth					
We are always able to cope with customers' demands as the need arises.	13.8	21.5	39.2	25.4	0.646 3rd
For years now, our cash-flow position has been sufficient to finance our basic business	3.1	32.4	42.3	25.4	0.677 2nd
Or revenue overtime has been good enough to finance our growth plan	5.4	32.3	43.8	13.5	0.573 4th
High patronage by our customers impacts our profit positively.	3.1	21.1	35.9	40.8	0.767 1st

Note: AII means Affirmative Incidence Index and RROP means Relative Rank Order Positioning

DISCUSSION

Fish farm business profile

The average (50%) self-employment of the fish farmers in the study area is compatible with the findings of This finding is in agreement with Renn *et al.* (2016) which acknowledged fish farming as a fast-growing enterprise employing about 250 million persons directly and indirectly through an increase in income related to fish.

The 77.68% sole proprietorship of the fish farmers observed in this study congruent with the report of Jacobi (2013). Sole-proprietorship predominance in the fish farming business could be attributed to the stimulus packages designed by the government. This was achieved through its designated agency to boost small and medium enterprises' financial capacity, characterized by sole-proprietorship ownership structure and weak operational /investment capital FAO (2002) and Abila (2003). However, there is a transition from sole-proprietorship toward corporate aquaculture business FAO (2005 and 2006). It can harp on growing consciousness of shared risk and equity investment as promoted in the state (government) through community-driven development approach by FADAMA III world bank assisted project (Okon and Inyang, 2016).

Commercial aquaculture is the panacea for meeting fish supply adequacy, and it entails substantive operating and investment capital which is often out of reach of most smallholder farmers Okwu (2011). Thus, intervention programs are tailored for farmers to transit from small scale to commercial scale and corporate aquaculture but with the conditionality of dealings with would-be beneficiaries as legal entities, to benefit from government fiscal incentives; tax exemption on business with less than 25 million naira turn over.

The corporate identity of most aquaculture enterprises could be induced by expected donor support and assistance or intervention program. This is a stimulus that is increasingly becoming beneficial towards job and wealth creation in the developing economy (Nyong, 2016). Aquaculture value chain as being vast for economic engagements, engaging both economically and socially backward people (Viswanathan *et al.,* 2003). Cooperative society depicts that some of the owners of aquaculture firms are risk aversive conscious and are open to social insurance trust concept which is still an emerging form of business sustainable management concept, it is inherent with perceived social trust or confidence in group crisis mitigation asset. The majority (66.7%) of fish farmers had no access to extension service. This result is in agreement with Agbebi (2012) that 47.80% had access to the fish extension services from ADP. This could further be interpreted that the study area is not well equipped with innovative information disseminated by these extension agents. Extension service support depicts that fish farmers assess extension services which implied inadequacy of trained personnel for effective coverage. Bonye *et al*. (2012) affirmed that extension services delivery enhances the farmer's technical and business management capacities leading to fish farmers' profitability.

Fish farm operational profile

The majority (77.69%) of the respondents have adopted aquaculture as their primary occupation, this is consistent with the fact that aquaculture remains an effective tool for mitigating unemployment. According to Udofot *et al*. (2016), most business enterprises that are operated by single individuals do not exist beyond 5 years. This finding is also similar to observations by FAO (2000) on the suboptimal operation of aquaculture in Nigeria and Akwa Ibom State Fish farming has emerged as one of the major food processing occupations of mankind with economically and socially backward people being employed in this profession as in ancient times (Viswanathan *et al*., 2003). Mkong *et al.* (2018) highlighted that it is an important source of food, nutrition, income, and livelihoods for millions around the world. The presence of a pond on a small farm may therefore provide secondary benefits to the farmer (e.g. through nutrient cycling, water storage for irrigation, etc.) in addition to the income gained from the pond directly, which together can significantly raise farm incomes. There is also the potential for fish culture in rice paddies during wet season floods (Dey *et al*., 2005).

The Source of financing of aquaculture is still dominated by personal incomes from the owners and support from household members and relatives in the study area. Arizona-Ogwu (2008) pointed out that the formal financial system provides services to about 35% of the economically active population while the remaining 65% are excluded from access to financial services. Akerele and Adekunmbi

(2018) have found that cooperative credit companies are highly productive and successful in helping members achieve their production objectives and improve their standard of living in the Ogun State of Nigeria. Unfortunately, corporate or cooperative funding support in the study area is still minimal in its contribution to investment development in the sector.

Major owners of fish farms (52.31%) are enterprise pluralistic in income generation involvement in the study area. Consistent with this, Taylor and Yunez-Naude (2000) stated that greater diversification in income may transfer labor from low-rewarding fishing activities to better-rewarding non-fish farm activities, thereby increasing utility. The result further suggests that other hands are engaged to manage the firms for profit maximization and continuous production (Nyong, 2016). The two main sources of feed identified among the aquaculture firms are consistent with the finding of De Silva (1999), FAO (2001), and Ataguba, Ogbe, Solomon, Okomoda, (2013) that local feed is used by the majority of fish farmers in the study area. Borehole (77.70%) as a source of water for most aquaculture firm is also consistent with the report of Boyd (2000), that borehole as a source of water is a good source for aquaculture.

Fish farm investment management effectiveness

Aquaculture investment performance was measured based on two performance indicators: return on investment and scale growth. The results thus explain the situation of the sector's viability and how the business is faring in the study area. On its component's analysis, the affirmative patterns and incidence indexes portray the fact that the performance of firms was impressive. The headcount ratio depicts the proportion of firms that are substantially adequate as the incidence index of the farms. The result suggests a cost-effective approach during business operations, thus resulting in the proportion of net profits to set aside as operational/investment capital, while sales growth indicates effective marketing strategy of the firm by identifying the precise market segment and meeting the customer's expectation in terms of fish size.

Conclusion and Recommendation

Based on the findings of this study, it is evident that fish farming has become a fast-growing enterprise employing communities but has however remained characterized by sole-proprietorship ownership that is yet to transit to corporate aquaculture business. is a profitable business venture, which heralds a significant level of business entry even though there was a drastic withdrawal, after at least five years of business startup. It is also evident that the fish farmers' involvement in cooperative society and access to extension service is still low. However, the fish farm remains an effective tool for alleviating unemployment and an important source of food, nutrition, income, and livelihoods. Corporate or cooperative funding support in the study area is still minimal in its contribution to investment development in the sector. Most of the entrepreneurs were dependent on locally made feeds and the proportion of firms with low fish farm investment management effectiveness index is relatively high. There is therefore a need for transition from the prevalent business ownership structure (sole-proprietorship) to cooperate or cooperative form to exploit opportunities embedded in economies of scale, shared risk, and equity investments.

Effective extension service coverage was limited and it is pivotal in facilitating this capacity which would impact profit and investment performance. It is expedient on the government through the relevant designated agency to evolve conditionality-friendly financial schemes to curb persistent dependence of farmers on personal savings as a major source of aquaculture business financing. More financial sector involvement in promoting the financial institutional support to fish production is needed as the current status of non-formal to formal institution financial investment.

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