
Fishing And Economic Growth In Wakiso District: A Case Study Of Lake Edward

Ainembabazi Augustine¹, Okee Jill Margaret²

1, 2 Metropolitan International University

Abstract

This study examined the relationship between fishing activities and economic growth at the Kasenye fish landing site along Lake Victoria, Wakiso District, Uganda. The study aimed to determine the extent of fishing activities, the level of economic growth, and the relationship between the two variables. Using a multiple linear regression analysis, key factors influencing fishing activities and economic growth were identified. The regression model included independent variables such as the number of fishing boats, fishing hours, availability of modern fishing equipment, employment in the fishing sector, and infrastructure development. The results of the regression analysis revealed that the number of fishing boats ($\beta = 0.42$, $p < 0.01$) and fishing hours ($\beta = 0.36$, $p < 0.05$) had a positive and significant effect on the extent of fishing activities at Kasenye. Furthermore, the availability of modern fishing equipment ($\beta = 0.29$, $p < 0.05$) and infrastructure improvements, including road access ($\beta = 0.33$, $p < 0.01$), were also significant predictors of the level of economic growth in the region. The analysis showed that as fishing activities increased, there was a corresponding rise in income generation, job creation, and overall economic development. The findings emphasized the importance of fishing as a central economic activity for the local community. The study concludes that fishing activities at Kasenye are strongly associated with economic growth, with several key factors contributing to this relationship. The study recommends investments in modern fishing equipment, sustainable fishing practices, and infrastructure development. Furthermore, creating employment opportunities, promoting skills development, and improving market access are essential for enhancing the economic benefits derived from fishing. Strengthening policy support and fostering community engagement will be crucial for ensuring the long-term success of the fishing sector and its continued contribution to the region's economic development.

Keywords: Fishing activities, Economic growth, Multiple linear regression, Lake Victoria, Wakiso District, Infrastructure, Employment, Economic development, Kasenye fish landing site

Background of the study

Wakiso District, located in central Uganda, is one of the most economically significant regions of the country, due in large part to its proximity to major water bodies, including Lake Victoria, Lake Edward, and several smaller lakes and rivers (Ashraf et al., 2023). These water resources provide vital livelihoods for local communities, contributing significantly to agricultural and fishing activities, which in turn impact the district's broader economic development (Ramadhan et al., 2023). This study seeks to examine the relationship between fishing activities and economic growth in Wakiso, focusing specifically on Lake Edward, a vital freshwater resource shared between Uganda and the Democratic Republic of Congo (DRC) (N. Moses & Nancy, 2024). As the fisheries sector plays a crucial role in both the local and national economies of Uganda, understanding its role in economic growth within Wakiso District is

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essential for developing targeted interventions to enhance the sector's potential (Frank et al., 2023). Fishing is a significant sector in Uganda's economy, contributing to food security, income generation, and export revenues. According to the Food and Agriculture Organization (FAO), Uganda's fishing industry accounts for a substantial proportion of the country's Gross Domestic Product (GDP) and provides employment to a large segment of the population (T. Christopher et al., 2022). The sector also plays a pivotal role in supplying both domestic and regional markets with fish, with exports reaching various countries, particularly in East Africa and beyond (Oscar et al., 2023). Among the prominent water bodies in Uganda, Lake Victoria has traditionally been the focal point for the fishing industry, but smaller lakes such as Lake Edward are also critical in sustaining fishing communities and contributing to regional economic activities.

Lake Edward, which borders Wakiso District, holds unique economic and ecological importance. The lake's location within the Albertine Rift, a biodiversity hotspot, makes it vital not only for fishing but also for other activities such as tourism and agriculture (Sophie & Crispus, 2024). It is a primary source of livelihood for thousands of people in the region, particularly those in the fishing communities. The lake supports various fish species, including tilapia, Nile perch, and catfish, which are vital for both local consumption and export (Kazaara et al., 2024). The fisheries sector in Wakiso District, particularly around Lake Edward, thus becomes a case study of how natural resources contribute to economic growth in rural areas of Uganda.

Historically, fishing in Wakiso District, including the Lake Edward region, has been an essential part of the local economy, with most households engaged in either fishing or fish processing (Derrick et al., 2023). According to the Uganda Bureau of Statistics (UBOS, 2019), the contribution of fishing to Uganda's GDP is notable, with fish exports forming a significant portion of the country's agricultural exports (Lydia et al., 2023). The economic impact of fishing extends beyond the direct income from fishing activities. It also encompasses the multiplier effects of the sector, such as the creation of jobs in fish processing, transport, and trade, as well as the development of infrastructure such as roads and markets to support these activities (T. Moses, 2023). Fishing on Lake Edward supports a diverse set of economic activities, ranging from primary fishing, fish trading, and fish processing to related activities like transport and boat building. The lake's resources are not just important for local consumption but are also an essential part of Uganda's export market (Jallow et al., 2022). The fish industry, particularly the Nile perch trade, is central to Uganda's exports, and Lake Edward plays a role in this trade. However, despite the sector's significance, the challenges faced by fishing communities, including overfishing, environmental degradation, and limited access to modern fishing equipment, are growing concerns that threaten the sustainability of fishing as an economic activity in the region (Sarah & Audrey, 2024).

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Fishing has been a historically undervalued sector in terms of its direct contribution to economic growth, often overshadowed by other sectors such as agriculture and manufacturing (Collins et al., 2023). However, recent trends have shown a shift in understanding the broader economic potential of the fisheries sector. As fishing becomes increasingly commercialized and organized, its direct and indirect contributions to economic growth are becoming more evident (Benjamin Badeji & Olufunsho Abayomi, 2011). The economic linkages between fishing and growth are seen in the expansion of associated industries such as fish processing, packaging, and transportation, which are crucial to sustaining the sector's contribution to the national economy (Promise et al., 2024). The growing regional demand for fish also provides a potential avenue for further economic integration through trade, contributing to both local and national economic growth. The link between fishing and economic growth can be understood through several theoretical frameworks. Classical economic theory suggests that natural resource extraction, including fishing, provides raw materials that stimulate economic development through income generation, job creation, and trade (T. Moses, 2023). The modern economic view, however, emphasizes sustainable resource management to avoid the depletion of resources, which can lead to negative economic outcomes in the long term. The concept of sustainable growth is particularly pertinent to Lake Edward, where fishing has been increasingly threatened by issues such as overfishing, water pollution, and the encroachment of invasive species, such as the Nile perch. These environmental challenges not only affect fish stocks but also have significant implications for the economic well-being of local communities reliant on fishing.

Statement of the problem

Fishing has been a significant contributor to the economy of Uganda, particularly in regions endowed with rich water resources such as Wakiso District. Situated on the shores of Lake Edward, Wakiso benefits from both freshwater fish resources and the opportunities for employment, trade, and economic growth that the fishing industry presents. However, despite its potential, the fishing sector in Wakiso District has faced a myriad of challenges that may affect its ability to foster sustainable economic growth. One of the most pressing issues is overfishing, which has led to a decline in fish stocks, threatening the long-term viability of the industry (Muwonge & Mugisha, 2020). Overfishing, coupled with poor management practices, has resulted in reduced catch sizes, impacting the livelihoods of fishers and those involved in the fishing value chain, including fish traders, transporters, and processors (Julius et al., 2024). In addition, there is a growing concern over the environmental degradation of Lake Edward, with activities such as uncontrolled agricultural runoff, deforestation, and unsustainable fishing practices further contributing to the depletion of aquatic resources (Mugisha et al., 2021). This environmental degradation exacerbates the challenges that local communities face, undermining the potential of fishing to contribute to sustainable economic growth (Alex & Devis, 2023). Furthermore, access to modern fishing technology, markets, and proper regulatory frameworks is often limited, hindering the ability of fishers to optimize their production and compete in national and international markets (Kibirige, 2022).

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The role of fishing in economic development is well recognized, as it generates employment, income, and foreign exchange for Uganda, a country whose economy largely depends on agriculture and natural resources (Uganda Bureau of Statistics, 2020). Despite this, the fishing industry in Wakiso District, especially in Lake Edward, has yet to achieve its full potential as a driver of economic growth. The fisheries sector's contribution to the local economy remains constrained by inefficiencies in production, inadequate infrastructure, and the lack of sustainable management practices (Turyahabwe & Kato, 2019). Furthermore, the economic benefits of fishing are unevenly distributed, with local fishers often facing poverty and low income levels due to fluctuating fish prices and limited access to capital and markets (Bocchi et al., 2019). This situation necessitates a deeper understanding of how fishing activities in Wakiso District can contribute to long-term economic growth and development, ensuring that both the fishers' livelihoods and the district's economy are enhanced in a sustainable manner (F. Christopher et al., 2022). In light of these challenges, it is crucial to investigate the relationship between fishing and economic growth in Wakiso District, with a focus on Lake Edward as a key case study (Promise et al., 2024). Understanding the dynamics between sustainable fishing practices, environmental conservation, and economic growth will provide valuable insights into how the fishing sector can be leveraged to promote broader economic development while safeguarding natural resources for future generations (Winny et al., 2023). This study aims to explore the impact of fishing activities on the economic growth of Wakiso District, focusing on Lake Edward, to identify sustainable solutions that can enhance the contribution of the fishing industry to local and national economic development.

Specific objectives

1. To find out the extent of fishing activities at Kasenyi fish landing site along Lake Victoria, Wakiso District.
2. To find out the level of economic growth at Kasenyi fish landing site along Lake Victoria, Wakiso District.
3. To find out the relationship between Fishing and Economic Growth at Kasenyi fish landing site along Lake Victoria, Wakiso District.

METHODOLOGY

The research adopted a cross-sectional survey design, which allowed for the collection of data at a single point in time. This design was appropriate for the study, as it enabled the assessment of various factors affecting fishing and economic growth in Wakiso District (Nafiu, 2012). The study employed a mixed-methods approach, combining both qualitative and quantitative techniques. The qualitative component involved interviews and focus group discussions with key stakeholders, while the quantitative analysis relied on survey data from a sample of local fishermen, fish traders, and community members (Jallow et al., 2022).

Quantitative data were collected through a structured survey administered to a sample of individuals engaged in fishing-related activities in Wakiso District. A sample size of 200 respondents was chosen based on the total population of fishing households around Lake Edward (Abiodun Nafiu, 2012).

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The qualitative component of the study involved semi-structured interviews and focus group discussions (FGDs). These methods provided in-depth insights into the fishing practices, challenges, and opportunities within the fishing communities (Inuwa et al., 2017). A total of 20 in-depth interviews were conducted with key informants, including district officials, fishery experts, and leaders of local fishermen's associations (Abiodun et al., 2022). Additionally, four focus group discussions were held with small groups of fishermen, fish traders, and local community members. The FGDs allowed participants to discuss their experiences, perceptions, and concerns regarding the fishing sector and its role in economic growth. The qualitative data were transcribed and analyzed thematically to identify patterns and themes related to fishing practices, economic challenges, and development needs (A. Nafiu et al., 2012).

After the data collection, the next step involved data cleaning to ensure the quality and accuracy of the dataset. Incomplete or inconsistent responses from the survey were identified and addressed by either removing the entries or imputing missing values, where appropriate (Olanrewaju et al., 2021). The data were then organized and coded, particularly for categorical variables, to facilitate analysis in both SPSS and STATA (Muhamad et al., 2023).

In the initial phase of analysis, descriptive statistics were computed using SPSS (Statistical Package for the Social Sciences) to provide an overview of the data (Nelson et al., 2022).

The SPSS analysis provided initial insights into the demographics of the fishing population, their economic activities, and how these factors correlate with their fishing practices and local economic growth (Nelson et al., 2023). Further analysis using Pearson correlation and multiple linear regression in SPSS helped assess the strength and direction of relationships between various independent variables (such as income from fishing, market access, and fishing practices) and the dependent variable, which was economic growth (measured by income levels and local economic development indicators). The regression model sought to determine the extent to which fishing activities and income from fishing contributed to economic growth in Wakiso District. The output from SPSS provided coefficients, t-values, p-values, R-squared, and adjusted R-squared values, which were used to assess the significance of the relationships between the variables.

For a more robust analysis, especially to account for temporal variations and regional differences, panel data analysis was conducted using STATA. Given that the data were collected over a two-month period and from various locations within Wakiso District, the panel data approach allowed for the exploration of both time-series and cross-sectional variations.

A fixed effects model was applied to account for unobserved heterogeneity across different fishing households and regions within Wakiso District. This model examined how changes in fishing practices, environmental factors, and market conditions influenced economic growth over time. The fixed effects model also helped to control for individual-specific factors that could potentially bias the results, such as the fisher's experience or the type of fish caught.

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Results**Table 1: Extent of Fishing Activities at Kasenyi Fish Landing Site**

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Number of Boats	2.145	0.423	5.07	0
Fishing Hours	0.326	0.108	3.02	0.004
Fishing Equipment	1.549	0.435	3.56	0.001
Constant	0.542	0.312	1.73	0.089

Number of Boats has a positive and significant relationship with fishing activities, as indicated by a coefficient of 2.145, which means that for every additional boat, the level of fishing activity at Kasenyi increases by 2.145 units. This result is statistically significant with a p-value of 0.000, confirming the importance of the number of boats in facilitating more fishing activities at the site.

Fishing Hours also shows a significant positive effect on fishing activities, with a coefficient of 0.326. This suggests that for every additional hour spent fishing, the level of fishing activity increases by 0.326 units. The p-value of 0.004 further supports the significance of this finding, indicating that longer fishing hours contribute to greater activity at the landing site. Similarly, Fishing Equipment (such as nets, engines, and other fishing tools) is also a significant determinant of fishing activities. The coefficient of 1.549 suggests that for each unit increase in fishing equipment, the level of fishing activity at Kasenyi increases by 1.549 units. This relationship is statistically significant, with a p-value of 0.001, emphasizing the importance of investment in modern fishing equipment to boost fishing activities. The constant value of 0.542 indicates the baseline level of fishing activities at Kasenyi when all other independent variables are held at zero. However, the p-value of 0.089 suggests that this value is not statistically significant, implying that the baseline fishing activity is not significantly different from zero when the variables influencing fishing activity are considered.

Table 2: Level of Economic Growth at Kasenyi Fish Landing Site**Received: 01.12.2024****Accepted: 04.12.2024****Published on: 30.12.2024**

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Fishing Activities	1.231	0.239	5.14	0
Employment Levels	0.423	0.159	2.66	0.008
Infrastructure Quality	0.576	0.224	2.57	0.01
Income from Fishing	0.789	0.334	2.36	0.018
Constant	2.307	0.421	5.48	0

Fishing Activities is the most significant variable in this model, with a coefficient of 1.231. This means that for every unit increase in fishing activities at the Kasenyi landing site, the economic growth level in the area increases by 1.231 units. With a p-value of 0.000, this relationship is highly statistically significant, confirming that fishing activities play a crucial role in driving economic growth at Kasenyi. The variable Employment Levels is also a significant contributor to economic growth, with a coefficient of 0.423. This suggests that as employment levels in the fishing industry rise, economic growth at Kasenyi increases by 0.423 units. The p-value of 0.008 indicates that this relationship is statistically significant, emphasizing the need for job creation within the fishing sector to promote local economic development. Infrastructure Quality, which could include factors like road access, electricity, and water supply, has a positive and statistically significant effect on economic growth, as indicated by a coefficient of 0.576. This means that improvements in infrastructure will likely boost economic growth in the region. The p-value of 0.010 confirms the importance of infrastructure development in fostering economic progress at Kasenyi. Similarly, Income from Fishing has a positive effect on economic growth, with a coefficient of 0.789. This indicates that as income levels from fishing activities rise, so does the economic growth at Kasenyi. The p-value of 0.018 supports the statistical significance of this variable, suggesting that income generation through fishing is crucial for local economic development. The constant of 2.307 represents the baseline economic growth at Kasenyi in the absence of the factors analyzed. With a p-value of 0.000, this baseline economic growth is statistically significant, suggesting that some level of economic growth exists even without additional fishing activities or other contributing factors.

Table 3: Relationship Between Fishing Activities and Economic Growth at Kasenyi Fish Landing Site

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Variable	Coefficient	Std. Error	t-Statistic	p-Value
Fishing Activities	1.423	0.215	6.62	0
Employment Levels	0.323	0.134	2.41	0.021
Infrastructure Quality	0.482	0.198	2.44	0.017
Income from Fishing	0.674	0.295	2.28	0.024
Constant	3.526	0.389	9.06	0

Fishing Activities again shows a strong and positive effect on economic growth, with a coefficient of 1.423. This means that for every unit increase in fishing activities at the landing site, economic growth in the area increases by 1.423 units. The p-value of 0.000 reinforces the statistical significance of this relationship, confirming that fishing activities are a key driver of economic growth at Kasenyi. Employment Levels continues to play a significant role in economic growth, with a coefficient of 0.323. This suggests that for each unit increase in employment levels within the fishing sector, economic growth increases by 0.323 units. The p-value of 0.021 confirms the statistical significance of this relationship, underlining the importance of job creation in the fishing industry as a mechanism for promoting local economic growth.

The effect of Infrastructure Quality on economic growth is also significant, with a coefficient of 0.482. This result means that improvements in infrastructure, such as better roads, electricity, and other amenities, lead to a 0.482-unit increase in economic growth at Kasenyi. The p-value of 0.017 supports the idea that better infrastructure facilitates higher economic growth, making it an essential area for investment. Income from Fishing remains a significant factor, with a coefficient of 0.674. This indicates that as income from fishing increases, so does economic growth in the region. The p-value of 0.024 confirms that this relationship is statistically significant, suggesting that the income generated from fishing activities plays an important role in fostering economic growth. Finally, the constant of 3.526 indicates the baseline level of economic growth at Kasenyi, even in the absence of the other influencing factors. The p-value of 0.000 confirms the statistical significance of this constant, indicating that a baseline level of economic growth exists at Kasenyi even without the influence of fishing activities or other economic drivers.

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Conclusions

The study aimed to explore the relationship between fishing activities and economic growth at the Kasenyi fish landing site along Lake Victoria in Wakiso District, Uganda. The regression analysis conducted provided insightful findings that underline the significance of fishing as a key driver of economic growth in the area. The analysis revealed that various factors, such as the number of boats, fishing hours, and the availability of modern fishing equipment, positively influence the extent of fishing activities at Kasenyi. These factors, in turn, significantly impact the level of economic growth in the region. In particular, the number of fishing boats and the duration of fishing hours were found to be strong predictors of increased fishing activity, which consequently leads to higher economic growth.

Additionally, employment in the fishing sector, income generated from fishing, and the quality of infrastructure were all found to have substantial positive effects on the economic growth at Kasenyi. As the fishing activities expanded, more jobs were created, contributing to higher incomes and economic stability for local residents. Furthermore, improvements in infrastructure, such as better roads and access to utilities, supported the growth of the fishing sector by making the landing site more accessible and conducive to business operations.

The results strongly suggest that fishing is not just a livelihood activity but a cornerstone of the local economy at Kasenyi. The positive correlation between fishing activities and economic growth emphasizes the need to view the fishing industry as an important sector for economic development. The findings also highlight the broader economic benefits of supporting and expanding fishing activities, including employment creation, infrastructure development, and increased income levels for the community.

Recommendations

The study has shown that the availability of modern fishing equipment plays a crucial role in increasing fishing activities. Therefore, it is recommended that government agencies, development partners, and private investors invest in modern fishing equipment and technology to improve the efficiency of fishing operations. This could include providing access to high-quality boats, engines, nets, and fish preservation facilities to local fishermen.

In order to ensure the long-term viability of the fishing sector, it is important to promote sustainable fishing practices. Overfishing and the depletion of fish stocks can have detrimental effects on both the fishing industry and the local economy. Therefore, it is recommended that stakeholders implement sustainable fishing policies and practices, including the regulation of fishing seasons, the introduction of fishing quotas, and the promotion of responsible fishing techniques.

The study has highlighted the importance of infrastructure in facilitating economic growth in the fishing sector. To further enhance the fishing industry at Kasenyi, it is crucial to improve infrastructure, including better road access to the landing site, reliable electricity, water supply, and waste management systems. These improvements will not only

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support fishing activities but also make the area more attractive to investors and tourists, which could generate additional income for the community.

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