# Do different Fish Supply Channels Combinations Increase the Net Profitability of Women-Owned SMEs in Kenya?

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# Context and Study Problem

## Global Importance of Fish

- ***Fish provides over 20% of animal protein for more than 3.3 billion people globally. In Sub-Saharan Africa, millions of households depend on wild fisheries and aquaculture for their livelihoods and food security(Elias et al., 2023)***
- ***Aquaculture plays a growing role in food production and economic development, with women accounting for more than half of inland fishing labor and around 42% of the workforce in commercial aquaculture companies.***
- ***In West African countries, 80% of seafood and fish products are marketed by women-owned small and micro enterprises(Overå et al., 2022).***
- ***However, women entrepreneurs in Africa are traditionally considered a vulnerable group facing several challenges due to common lack of properties, fixed assets, lower income, and entrepreneurial inexperience compared to men (Elias et al., 2023).***

# Study Problem and Research Questions

## Study Problem

- ***Current aquaculture research focuses largely on global value chains, leaving limited understanding of domestic urban aquaculture supply chains in low-income and emerging economies.***
- ***There is a critical need for deeper investigation into how urban aquaculture value chains function, particularly regarding the role of women entrepreneurs.***

## Research Questions

1. ***What strategies and mechanisms do women entrepreneurs use to navigate urban aquaculture supply value chains?***
2. ***Which key factors influence women's selection of tilapia suppliers, and how do these decisions impact profitability?***
3. ***What policy actions can strengthen aquaculture supply chains by enhancing women's capacity to generate sustainable livelihoods?***

***Generating these insights will support inclusive policy design, improve aquaculture supply chain efficiency, and help address gender-based inequalities in the fisheries sector.***

# Conceptual Framework

## *Why Supplier Choice Matters for Women Fish Retailers*

- ***Women's decisions on where to source fish directly influence business profitability and household welfare.***
- ***Choosing reliable suppliers helps ensure consistent product flow and customer retention, while poor sourcing choices can lead to stock shortages, quality issues, and reduced income.***
- ***Supplier decisions are shaped by both market access and personal business networks.***

## *Key Purchasing Criteria Women Consider*

- ***Timely delivery & reliability — avoids delays and spoilage, maintains customer trust***
- ***Quality & freshness of fish — critical for consumer satisfaction and repeat purchases***
- ***Clean handling & hygiene standards — aligns with food safety expectations***
- ***Affordable pricing — ensures competitive selling prices and decent profit margins***
- ***Bulk/volume discounts — reduces costs and increases earnings on high-demand days***
- ***Availability of processed/ready fish — saves time and reduces labor burden***
- ***Proximity & transport convenience — lowers transport cost and time burden***

***Guaranteed Fish Supply***

***Consistent sales and customer loyalty***

***Higher Quality Products***

***Premium pricing and repeat buyers***

***Stable Supplier Relationships***

***Lower uncertainty and business risk***

***Efficient Sourcing***

***Saves time and reduces operational costs***

***Competitive Pricing***

***Improves profit margins and market competitiveness***

# Study Sampling and Data Collection

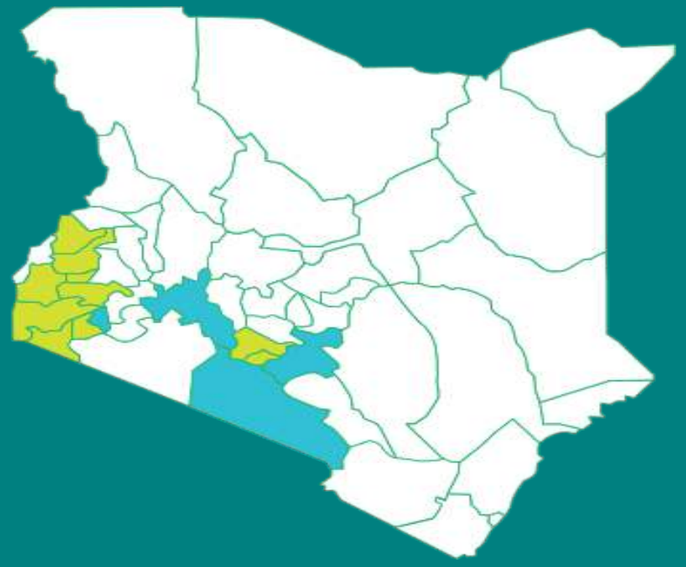
- ***A multistage random sampling approach was used to select 941 women-owned fish micro-enterprises across five major urban and peri-urban centers in Kenya.***
- ***Counties and sub-counties were purposively selected based on fish retail activity intensity, while individual fish retail micro-enterprises within selected areas were randomly sampled to ensure representativeness.***

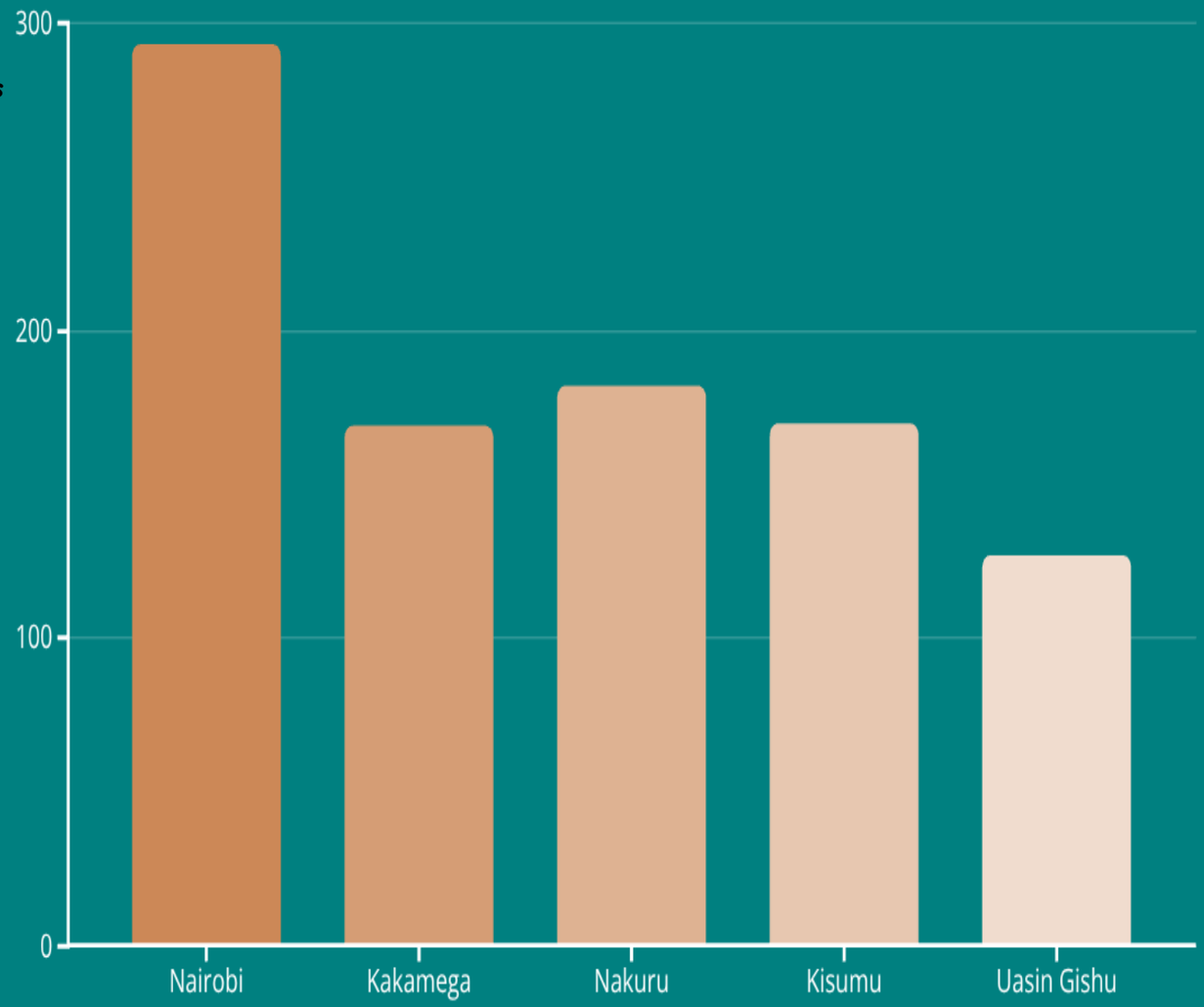
### *Data Collection Approach*

***Data were collected using a structured questionnaire covering multiple dimensions of women's fish retail enterprises: -2023 July***

- ***Personal and enterprise characteristics***
- ***Asset ownership and financial status***
- ***Main fish suppliers and purchasing criteria***
- ***Fish sales and income across normal, peak, and low seasons***
- ***Marketing and business practices***

***The comprehensive survey design enables analysis of how different supply channel choices influence enterprise profitability and sustainability for women fish traders.***





# Empirical Strategy: Multilevel Endogenous Switching Regression Model

- ***The analysis employs a sophisticated Multilevel Endogenous Switching Regression Model (MeSRM) to understand how supply channel choices affect profitability for women fish entrepreneurs.***
- ***This methodological approach addresses critical challenges in estimating causal relationships when entrepreneurs self-select into different supplier types.***

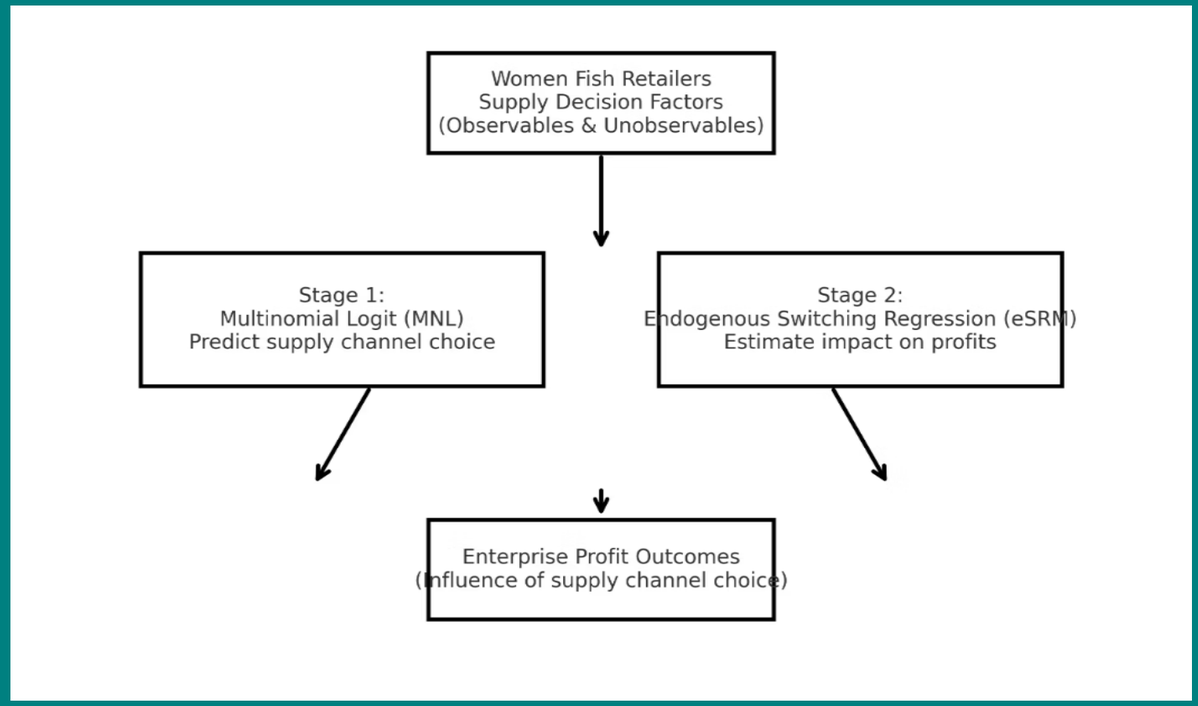
## *Why This Model?*

- ***Captures both observed and unobserved factors influencing supplier decisions***
- ***Corrects for selection bias in supply channel choice***
- ***Suitable for multi-option sourcing markets like fish value chains***
- ***Allows fair comparison of profit outcomes across supplier types***

## *Stage 1: Supplier Choice Modeling*

***Multinomial Logit (MNL) estimates probability of choosing each supply channel:***

1. ***Farmers***
2. ***Traders / Brokers***
3. ***Intermediaries***
4. ***Lake suppliers***
5. ***Wet Markets***
6. ***Vertically Integrated Firms***




## *Stage 2: Profit Outcome Estimation*

- ***Endogenous Switching Regression (eSRM) evaluates profit impacts by comparing outcomes across chosen and counterfactual supply channels.***
- ***This approach reveals not just correlations but the actual causal effect of supply channel decisions on enterprise profitability.***

***Key Technical Advantage: The MeSRM framework allows us to answer: "What would a woman entrepreneur's profit be if she chose a different supplier, controlling for all factors that influenced her original choice?" This counterfactual comparison is essential for evidence-based policy recommendations.***

# Enterprise Characteristics Across Supply Channels

- *Analysis of 941 women-owned fish retail enterprises reveals significant variation in business characteristics, purchasing patterns, and operational practices across different supply channel choices.*
- *Understanding these differences is crucial for identifying which factors enable or constrain women's success in fish value chains*

**41.6**

***Average Age***

***Farmer-sourced entrepreneurs (years)***

**12.7**

***Education Years***

***Farmer-sourced entrepreneurs***

**11.8**

***Experience Years***

***Lake supplier entrepreneurs***

**87.8%**

***Customer Lists***

***Vertically-integrated supply users***

### *Enterprise Operations*

- *Vertically-integrated supply users most likely to maintain regular customer lists (87.8%)*
- *Farmer-connected women operate more purchase cycles per week (3.13)*
- *Farmer channel shows highest refrigeration ownership (53.5%)*
- *Trader-sourced retailers show highest rate of health permits (76%)*

### *Purchase Volumes & Costs*

- *Lake suppliers deliver highest volumes (~81 kg/cycle) but higher transport costs*
- *Intermediary firms provide lowest volumes (15 kg/cycle)*
- *Vertically integrated & intermediary channels charge highest price/kg (KSh 323)*
- *Lake channel offers cheapest per kg (KSh 216) but highest transport cost (KSh 526)*

### *Discount & Incentive Patterns*

- *Farmers offer best financial incentives to retailers*
- *Bulk discounts available from 33% of farmer suppliers*
- *Free delivery provided by 26% of farmer suppliers*
- *Prepayment discounts rare across all channels (5-10%)*

***These descriptive patterns reveal the key purchasing criteria (KPC) that influence women entrepreneurs' selection of fish supply channels and provide context for understanding profitability outcomes across different sourcing strategies.***

# Key Purchasing Criteria Influencing Supply Channel Choice

- ***The diverse characteristics across supply channels highlight critical purchasing criteria that shape women entrepreneurs' supplier decisions.***
- ***Understanding these factors reveals both opportunities and constraints that women face when navigating fish value chains in Kenya.***

## *Supply Reliability & Consistency 32.3%*

***Women prioritize suppliers who can guarantee regular, predictable deliveries.***
***Irregular supply from lake channels due to seasonality and variable catch volumes makes them less attractive despite lower prices.***

## *Product Quality & Freshness 23.7%*

- ***High-quality, fresh fish is essential for customer satisfaction and repeat business.***
- ***Vertically integrated and farmer channels typically deliver superior quality through better handling and cold chain management.***

## *Affordable Pricing Structure 17%*

- ***Limited working capital makes cost efficiency critical. Women show strong preference for suppliers offering competitive prices, bulk discounts, and flexible payment terms that protect profit margins.***

***"Enterprise Characteristics" section reveals that women entrepreneurs are making strategic trade-offs between price, quality, reliability, and accessibility when choosing suppliers.***
***Those with better infrastructure (cold storage) and formal credentials (health permits) have greater flexibility to optimize across these criteria.***

# Determinants of Supply Channel Choice: Multinomial Logit Results

- ***The first-stage Multinomial Logit model reveals how entrepreneur characteristics, business assets, and purchasing factors influence women's probability of choosing different fish supply channels.***
- ***Understanding these determinants is essential for designing interventions that expand women's access to profitable supply networks.***

01

***Price Sensitivity Drives Supplier Selection***

- ***Women entrepreneurs show strong preference for affordable supply channels—notably vertically integrated firms and intermediaries.***
- ***Higher fish prices increase likelihood of sourcing from these suppliers, reflecting limited working capital and strong focus on cost efficiency.***

02

***Quantity & Supply Consistency Matter***

- ***Higher quantities and reliable stock from integrated firms, intermediaries, and farmers attract women entrepreneurs.***
- ***Irregular supply from lake channels reduces preference—affected by seasonality, overfishing, and variable catch volumes.***

03

***Lower Transport Costs Encourage Channel Choice***

- ***Women prefer suppliers with proximity or established delivery networks, minimizing transport costs.***
- ***Vertically integrated and intermediary channels reduce logistics burden through better distribution infrastructure.***

04

***Cold Storage Ownership Expands Sourcing Options***

- ***Women with deep freezers are more likely to source from farmers and vertically integrated suppliers due to improved preservation ability.***
- ***Cold storage allows bulk purchase, reduced spoilage, and better price bargaining.***

## *Additional Significant Factors*

- ***Age: Older entrepreneurs slightly more likely to source from vertically integrated firms (stability preference)***
- ***Experience: More experienced traders favor intermediaries and integrated suppliers (established networks)***
- ***Regular customer lists: Strong predictor of vertically integrated sourcing (87.8% adoption rate)***
- ***Business operation days: More days open increases intermediary and wet market sourcing***
- ***Fish size preference: Large fish buyers favor traders; medium fish buyers choose lake suppliers***
- ***Food safety training: Trained entrepreneurs more likely to use lake suppliers and avoid wet markets***

***Overall Takeaway***

- ***Women's fish market channel choices are shaped by affordability, supply reliability, logistics efficiency, and cold-chain access.***
- ***Supporting capital access, cold storage technologies, and affordable distribution networks can boost women's participation and competitiveness in fish value chains.***

**Determinants of marketing choices for women fish entrepreneurs: Multinomial logit model (First stage of MESRMLR)**

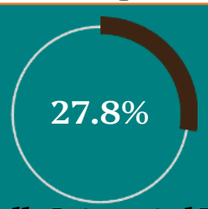
| | Farmers | Intermediary companies | Supplier from lake (wild catch) | Trader | Vertically integrated company | Wet Market |
|---|---|---|---|---|---|---|
| | Marginal effects (SE) | Marginal effects (SE) | Marginal effects (SE) | Marginal effects (SE) | Marginal effects (SE) | Marginal effects (SE) |
| **Age of the entrepreneur owning SME** | 0.003***(0.001) | -0.006*** (0.003) | 0.001(0.003) | -0.04(0.002) | 0.007643**(0.004) | -0.005(0.004) |
| **Education years of entrepreneur owning SME** | 0.003(0.004) | -0.008(0.006) | -0.003(0.008) | 0.001(0.005) | -0.009(0.01) | 0.017(0.011) |
| **Experience of entrepreneur owning SME** | -0.004(0.003) | **0.005*(0.003)** | 0.003(0.004) | 0.009(0.003) | **0.012*** (0.005)** | 0.007(0.005) |
| **Health permit certificate 1=yes 0=otherwise** | 0.173(6.086) | 0.045(0.096) | -0.034(1.089) | 0.001(0.340) | -0.245(2.811) | 0.06(1.760) |
| **SMEs has regular customer list** | 0.006(0.024) | -0.042(0.037) | -0.008(0.051) | -0.001(0.033) | 0.354*** (0.008) | -0.308*** (0.064) |
| **Number of day's SME is operated in a week** | 0.008(0.02) | 0.063**(0.031) | 0.012(0.037) | -0.031(0.027) | -0.118(0.045) | **0.065**(0.047)** |
| **Bulk/volume discount 1=yes 0=otherwise** | 0.007(0.006) | -0.005(0.012) | -0.018(0.014) | -0.001(0.01) | -0.014(0.017) | 0.030*(0.018) |
| **Size of fish do you purchase Large size** | 0.029*(0.018) | 0.053(0.035) | -0.06(0.041) | 0.097*(0.044) | 0.001(0.052) | -0.121** (0.054) |
| **Sized fish purchased Medium size** | -0.004(0.023) | 0.003(0.038) | 0.136***(0.071) | -0.021(0.034) | -0.151*** (0.071) | 0.037(0.08) |
| **No Kgs of Tilapia on average purchased** | **0.062**(0.003)** | -0.006*** (0.002) | -0.001*(0.008) | -0.002(0.001) | **0.003***(0.001)** | 0.001(0.002) |
| **Training on food and hygiene 1=yes 0=otherwise** | -0.022(0.022) | -0.058(0.038) | 0.066*(0.04) | 0.006(0.003) | 0.049(0.057) | -0.094*(0.062) |
| **Average cost for a Kg of Tilapia** | 0.034(0.012) | **0.006*(0.043)** | -0.006(0.037) | 0.003(0.003) | **0.001***(0.005)** | 0.001(0.001) |
| **Transport cost in Ksh** | 0.011(0.007) | **0.021**(0.009)** | 0.005(0.009) | 0.013(0.007) | **0.001***(0.018)** | -0.282(0.018) |
| **Ownership of refrigeration/ deep freezer 1=yes 0=otherwise** | 0.051*(0.03) | -0.049(0.038) | -0.027(0.045) | 0.014(0.033) | **0.102**(0.055)** | -0.092(0.06) |
| **Observations** | 15 | 73 | 374 | 99 | 139 | 241 |
| **Joint Wald $\chi^2$ (5)** | 16.14 | | | | | |
| **Joint IV Wald $\chi^2$ (75 )** | 147.54 | | | | | |
| **Prob > chi2** | 0.0000 | | | | | |
| **Pseudo R2** | 0.2590 | | | | | |

# Determinants of Tilapia Fish profitability: Second-stage MESR model (i)

| | Farmer | Intermediary companies | Supplier from lake | Trader/ brokers | Vertically integrated company | Wet Market |
|---|---|---|---|---|---|---|
| | Coeff(SE) | Coeff(SE) | Coeff(SE) | Coeff(SE) | Coeff(SE) | Coeff(SE) |
| Age of the entrepreneur owning SME | 8.980(6.390) | -0.0475** (0.023) | 0.007(0.015) | -0.006(0.020) | **0.025***(0.013) | -0.021**(0.013) |
| Education years of entrepreneur owning SME | 16.92(17.07) | -0.054(0.052) | -0.010(0.040) | 0.001(0.048) | -0.036(0.034) | **0.054*(0.034)** |
| Experience of entrepreneur owning SME | 17.35**(8.49) | 0.0418*(0.028) | 0.021(0.018) | 0.009(0.027) | -0.048***(0.018) | 0.025(8900) |
| Health permit certificate 1=yes 0=otherwise | **250.3***(99.18)** | 0.372(0.293) | 0.050(0.239) | 0.135(0.305) | **0.575***(0.203)** | **0.3746*(0.198)** |
| SMEs has regular customer list | -0.024(0.044) | 0.074(0.159) | -0.209*** (0.065) | 0.210*(0.109) | -0.017(0.055) | -0.085** (0.042) |
| Number of SME fish retail branches | **166.4**(81.09)** | 0.411(0.247) | -0.005(0.196) | -0.333(0.269) | **0.4529**(0.167)** | **0.2333*(0.155)** |
| Tilapia fish purchase Cycle | -13.02(30.68) | -0.020(0.096) | -0.074(0.074) | -0.009(0.097) | -0.046(0.060) | **0.0986*(0.057)** |
| Size of Tilapia fish do you purchase Small | -167.8(93.06) | 0.293(0.291) | -0.210(0.221) | **0.8715***(0.382)** | 0.055(0.186) | -0.36192**(0.176) |
| Sized Tilapia fish purchased Medium | 65.86(123.56) | -0.081(0.338) | 0.640**(0.357) | -0.259(0.332) | -0.481**(0.249) | 0.143(0.248) |
| Kgs of Tilapia on average purchased | **10.19***(1.94)** | 0.045** (0.016) | 0.002(0.003) | -0.007(0.007) | **0.005**(0.003)** | -0.005(0.003) |
| Training on food and hygiene 1=yes 0=otherwise | -151.813*(98.85) | -0.302(0.307) | **0.337*(0.220)** | **0.6222**(0.291)** | 0.165(0.205) | -0.302(0.199) |
| Average cost for a Kg of Tilapia | 1.7625*(0.92) | 0.005(0.003) | -0.003(0.002) | 0.001(0.003) | -0.003(0.002) | 0.002(0.002) |
| Transport cost in Ksh | 1.1042***(0.27) | 0.001*(0.001) | **0.002***(0.001)** | **0.003***(0.001)** | -0.001***(0.001) | -0.0015***(0.001) |
| Ownership of refrigeration/ deep freezer 1=yes 0=otherwise | -56.64(101.37) | -0.513(0.327) | -0.176(0.244) | 0.220(0.323) | **0.492**(0.199)** | -0.288(0.193) |
| Bulk/volume discount 1=yes 0=otherwise | -156.8(718.96) | 0.674***(0.202) | -0.218(0.162) | -0.133(0.196) | 0.161(0.143) | -0.2080*(0.130) |
| _cons | | -5.962(2.201) | -0.807(1.740) | 0.145(2.222) | 2.236(1.578) | -0.675(1.480) |
| Selectivity terms | | | | | | |
| _m1 | **0.342** (0.028)** | -0.39791(0.045) | -0.527 (0.066) | -0.4443 (0.039) | -0.431(0.043) | -0.418(0.04) |
| _m2 | 2.09127(0.258) | **0.085*(0.128)** | -0.348 (0.079) | 0.101(0.13) | **0.564*** (0.127)** | -0.206(0.13) |
| _m3 | 11.25(-1.586) | -0.782(0.272) | -0.449*** (0.307) | 0.293(0.322) | 0.184(0.31) | 0.108(0.32) |
| _m4 | -0.505(0.534) | 11.08(0.734) | -0.147(0.489) | -9.03(0.594) | 0.382(0.442) | 1.454412(0.33) |
| _m5 | 0.71(0.02) | 0.672(0.03) | -0.590(0.039) | 0.641(0.025) | 0.650***(0.028) | 0.658(0.027) |
| _m6 | 0.124(0.032) | 1.089(0.14) | 0.706(0.056) | 1.106(0.144) | 0.569(0.072) | 0.108 (0.897) |
| Observations | 15 | 73 | 374 | 99 | 139 | 241 |

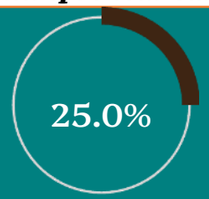
# Supply Channel Treatment Effects: Profitability Impacts

- *Treatment effect estimates reveal the causal impact of choosing different fish supply channels on enterprise profitability.*
- *These results answer the critical question: "How much more (or less) would a woman entrepreneur earn if she switched to a different supplier type?"*




***Vertically Integrated Firms***

***Highest profit gain from consistent quality, reliable supply, and efficient logistics***




***Direct Farmer Sourcing***

***Substantial earnings boost from lower procurement costs and fresh supply access***

***Intermediary Suppliers***

***Positive growth through easier access and predictable volume availability***

***Lake Suppliers***

***Small profit decline due to supply fluctuations and quality variability***

***Reduced profitability from inconsistent quality and higher spoilage risk***

***Modern Supply Chains Win***

***Formalized, structured supply chains (integrated firms, farmers, intermediaries) consistently outperform informal channels in profitability outcomes.***

***Informal Channel Risks***

***Lake and wet-market sourcing leads to lower margins due to seasonality, quality inconsistency, and post-harvest losses.***

***Scale of Impact***

***Switching from lake/wet market to integrated suppliers could increase average annual profits by ~30%, transforming household economics.***

## *Why Integrated Channels Excel*

1. ***Supply Reliability: Predictable delivery schedules reduce stockouts and customer loss***
2. ***Quality Standards: Consistent handling and cold chain reduce spoilage rates***
3. ***Food Safety Compliance: Proper documentation enables premium market access***
4. ***Volume Flexibility: Ability to scale orders up/down based on demand***
5. ***Price Stability: Reduced exposure to volatile spot market prices***
6. ***Business Support: Training, credit access, and market information sharing***

***Evidence-Based Conclusion***

- ***Results confirm that supplier reliability, food safety, and supply continuity drive higher enterprise performance.***
- ***Women entrepreneurs earn significantly more when sourcing through formalized, integrated supply chains rather than informal lake and wet-market channels.***
- ***Strategic supplier choice is not just a business decision—it's a pathway out of poverty.***

# Enabling Factors for Higher Profitability

- *Beyond supply channel choice, specific enterprise characteristics and business practices significantly strengthen women's returns.*
- *These enabling factors represent concrete intervention points where targeted support can amplify profitability outcomes.*

## Regulatory Compliance

- *Health certificates unlock access to premium markets and build consumer trust.*
- *Women with permits can serve hotels, restaurants, supermarkets, and institutional buyers who demand documented food safety—markets that command 20-40% price premiums over informal sales.*

## Cold-Chain Infrastructure

- *Deep freezers reduce spoilage from 15-30% to below 5%, enable bulk buying when prices are low, and support inventory management across demand fluctuations.*
- *Women with cold storage earn 25-40% more than those without preservation capacity.*

## Scale of Supply

- *Larger purchase volumes generate lower per-unit costs through bulk discounts while ensuring stable stock availability.*
- *Women buying 50+ kg per cycle achieve significantly better margins than those purchasing 10-20 kg, but need working capital or credit access to scale up.*

## Consistent Operations

- *More trading days per week expand revenue opportunities, signal reliability to customers and suppliers, and build market reputation.*
- *Operating 6-7 days weekly versus 3-4 days correlates with 30-50% higher monthly sales.*

## Access to Capital

***Working capital enables bulk purchasing, equipment investment, and buffer inventory.***
***Micro-credit or savings groups support scaling operations and seizing market opportunities.***

## *Business Skills Training*

***Knowledge of pricing strategies, inventory management, food safety, and customer service improves operational efficiency and profit margins.***

## *Technology Adoption*

***Mobile payment systems, inventory tracking, and supplier communication platforms reduce transaction costs and improve business coordination.***

## *Network Relationships*

***Strong ties with suppliers, peer traders, and business associations provide information, support, and collective bargaining power.***

## *Synergistic Effects*

- *These enabling factors work together multiplicatively, not just additively.*
- *A woman entrepreneur with cold storage, a health permit, business training, and access to reliable suppliers achieves substantially higher returns than the sum of individual benefits.*
- *Integrated support packages that address multiple constraints simultaneously produce the greatest impact on profitability and business sustainability.*

***Key Takeaway:*** ***Empowerment + infrastructure + compliance = profitable women-led fish enterprises.***
***Supporting cold-chain access, regulatory pathways, business skills, and supplier connections creates conditions for women's economic advancement in aquaculture value chains.***

# Policy Recommendations and Call to Action

- *Evidence demonstrates that women's fish supply channel choices significantly impact enterprise profitability and household welfare.*
- *Strategic policy interventions can strengthen women in fish value chains and unlock broader economic benefits for communities and national food security.*

### Expand Cold-Chain Investment

- *Increase financing for affordable freezers and solar-cold storage through subsidized credit, equipment leasing programs, or direct grants.*
- *Promote shared refrigeration hubs at markets and landing sites to reduce individual capital requirements while improving overall value chain efficiency.*

### Streamline Regulatory & Food-Safety Support

- *Fast-track low-cost health certification processes specifically for women-owned micro-enterprises.*
- *Provide compliance coaching, mobile testing kiosks, and group certification options that reduce barriers to formal market participation while maintaining food safety standards.*

### Strengthen Market Access & Supply Integration

- *Facilitate direct linkages between women traders and farms, intermediaries, and integrated suppliers through business-to-business platforms and matchmaking events.*
- *Incentivize formal supply contracts and digital traceability channels that reduce transaction costs and build trust between value chain actors.*

### Deliver Capacity & Business Skills Programs

- *Offer targeted enterprise training on pricing strategies, procurement planning, inventory management, and hygiene practices.*
- *Build digital literacy for e-logistics and supply-network platforms that enable women to access information, coordinate deliveries, and connect with reliable suppliers.*

1. **Fund Infrastructure**
   *Blended finance for cold-chain assets*
2. **Build Networks**
   *Direct farm-women trader linkages*
3. **Reduce Barriers**
   *Subsidized certification & training*
4. **Enable Credit**
   *Micro-finance for fish SMEs*
5. **Formalize Roles**
   *Women in value chain governance*

## Expected Outcomes

- *30-50% profit increases for women shifting to integrated supply chains*
- *15-25% reduction in post-harvest losses through cold-chain access*
- *40-60% growth in formal market participation via health certification*
- *Household food security improvements from stable income flows*
- *Youth employment creation in expanded fish retail operations*
- *Gender equality advancement through economic empowerment*

*Closing Statement: When women traders access modern supply networks, affordable cold-chain tools, and regulatory pathways, we unlock a more profitable, safe, and resilient fish economy for all. Investing in women traders accelerates food security, rural incomes, and fisheries modernization.*