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BUSINESS MODEL CANVAS ANALYSIS OF A PANGASIUS NURSERY FARM IN PASIR GAOK, BOGOR REGENCY

Analisis Kanvas Model Bisnis Pembenihan Ikan Patin Di Pasir Gaok, Kabupaten Bogor

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ABSTRACT

Aquaculture is a rapidly growing food production sector that plays a vital role in national food security. This study aims to analyze the business model of a Pangasius nursery farm located in Pasir Gaok, Rancabungur District, Bogor Regency, using the Business Model Canvas (BMC) framework. A qualitative descriptive approach was employed, with primary data collected through semi-structured interviews, field observations, and documentation. The results indicate that the Pangasius nursery farm serves local collectors, market traders, and individual buyers, offering consistent fish quality and stable pricing. Feed constitutes the largest cost component, while revenue is mainly derived from the sale of fingerlings. The discussion highlights that business success depends on cost efficiency, effective technical management, and partnerships with research institutions that foster innovation and sustainability in aquaculture enterprises.

Keywords: marketing, logistics, production costs, partnerships, quality.

ABSTRAK

Akuakultur merupakan sektor produksi pangan yang berkembang pesat dan berperan penting dalam ketahanan pangan nasional. Penelitian ini bertujuan untuk menganalisis model bisnis pada usaha pembenihan ikan patin di Pasir Gaok, Kecamatan Rancabungur, Kabupaten Bogor, menggunakan pendekatan kanvas model bisnis. Metode penelitian yang digunakan adalah deskriptif kualitatif dengan pengumpulan data primer melalui wawancara semi-terstruktur, observasi lapangan, dan dokumentasi. Hasil penelitian menunjukkan bahwa usaha pembenihan ikan patin memiliki segmen pelanggan utama berupa pengepul, pedagang pasar, dan pembeli individu, dengan nilai utama berupa kualitas ikan yang konsisten dan harga yang stabil. Struktur biaya didominasi oleh pakan, sedangkan pendapatan utama berasal dari penjualan benih ikan. Pembahasan menunjukkan bahwa keberhasilan usaha dipengaruhi oleh efisiensi biaya, pengelolaan teknis yang baik, serta kemitraan dengan lembaga penelitian yang mendukung inovasi dan keberlanjutan usaha akuakultur.

Kata kunci: pemasaran, logistik, biaya produksi, kemitraan, kualitas.

INTRODUCTION

Aquaculture has become one of the fastest-growing food production sectors worldwide, contributing significantly to global food security and economic development. It involves the controlled cultivation of aquatic organisms under managed environmental conditions to achieve sustainable outcomes (FAO, 2020). Within this context, Pangasius (catfish) farming has emerged as a vital aquaculture commodity in Southeast Asia, particularly in Vietnam and Indonesia, due to its adaptability, high market demand, and relatively low production costs (Phan et al., 2009). Hatchery operations, which include broodstock preparation, spawning, egg incubation, larval rearing, and water quality management, form the foundation of successful Pangasius aquaculture. Effective hatchery management reduces larval mortality, a critical challenge in early developmental stages, and ensures the production of high-quality seed for grow-out phases.

The success of Pangasius hatcheries is closely tied to broodstock readiness and environmental stability. Broodstock management, including nutrition, handling, and spawning techniques, directly influences reproductive performance and seed quality (Wardani *et al*., 2021). Studies have shown that farmer knowledge and technical capacity play a decisive role in optimizing hatchery processes, particularly in understanding reproductive physiology and environmental control (Nguyen et al., 2016). Capacity-building initiatives and farmer training programs have been linked to improved hatchery outcomes, highlighting the importance of human capital in aquaculture sustainability.

The larval stage of Pangasius is highly sensitive to environmental fluctuations, requiring precise management of feeding and water quality. Appropriate initial feed, both in terms of particle size and nutritional composition, supports larval growth and survival (Morioka *et al*., 2010). Water quality management practices such as aeration, filtration, and scheduled water exchange are essential to minimize stress and mortality. The integration of nutritional strategies, environmental control, and procedural accuracy underscores the importance of technical skill development among farmers. However, aquaculture enterprises are not only biological systems but also economic ventures. To remain competitive and sustainable, hatchery operations must be analysed through managerial frameworks that capture both technical and business dimensions.

One such framework is the Business Model Canvas (BMC), which provides a structured approach to evaluating how aquaculture enterprises create, deliver, and capture value (Osterwalder & Pigneur, 2013). By mapping key elements such as customer segments, value propositions, key resources, and revenue streams, the BMC enables nursery farms to identify strengths, weaknesses, and opportunities for innovation. Applying the BMC to Pangasius hatcheries bridges the gap between aquaculture practice and entrepreneurial strategy, offering insights into how technical efficiency translates into economic viability. This paper therefore analyzes the business model canvas in a Pangasius nursery farm, aiming to highlight the interplay between biological management and business sustainability.

METHODS

This study was developed based on primary data collected through semi-structured interviews conducted at a Pangasius nursery farm in Pasir Gaok. The interviews were designed to capture key aspects of production and marketing systems for Pangasius nursery at the farm level. The collected data were subsequently synthesized into a concise and systematically structured report.

The interview outputs were then analyzed and organized using the BMC framework to provide a comprehensive overview of the enterprise model. The analysis covered key components, including customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. This approach enabled a structured assessment of the operational and economic characteristics of the aquaculture business.

RESULTS

The observation of the Pangasius nursery farm in Pasir Gaok, Rancabungur District, Bogor Regency, West Java, revealed the following characteristics based on the Business Model Canvas (BMC) framework, as also displayed in Figure 1:

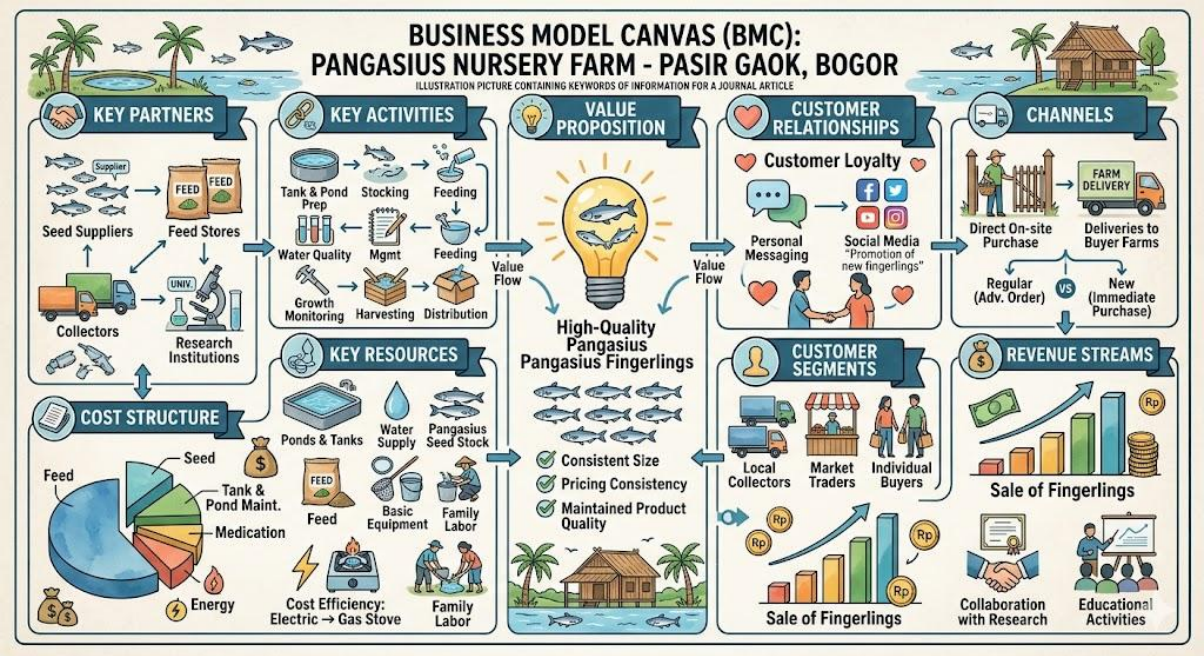

Figure 1. Business model canvas of Pangasius nursery farm in Pasir Gaok, Bogor.

- Customer Segments.

The main customers include local collectors, market traders, and individual buyers who purchase directly from the farm.

- Value Proposition.

The farm offers high-quality Pangasius fingerlings with consistent size and pricing. Product quality is maintained throughout the rearing process.

- Channels.

Fish are sold through direct on-site purchases and deliveries to buyer farms. Regular customers place orders in advance, while new buyers purchase without prior arrangements.

- Customer Relationships.

Customer loyalty is maintained through consistent product quality and fair pricing. New fingerling production is advertised and promoted to the buyers via personal messaging platform and social media.

- Revenue Streams.

Income is generated from the sale of fingerlings. Additional revenue comes from collaboration with research institutions and educational activities.

- Key Resources.

The farm utilizes ponds, water supply, seed stock, feed, and basic equipment. Labor is provided by family members.

- Key Activities.

Core activities include tank and pond preparation, stocking, feeding, water quality management, growth monitoring, harvesting, and distribution.

- Key Partners.

Partnerships include seed suppliers, feed stores, collectors, and research institutions.

- Cost Structure.

The largest expenditure is feed, followed by seed, tank and pond maintenance, medication, and energy. Cost efficiency is achieved by replacing electric heaters with gas stoves during seed production.

DISCUSSION

The observed data reveal a typical pattern of small-scale aquaculture enterprises that rely on local networks and direct customer relationships. This structure aligns with findings by Belton et al. (2012), who noted that smallholder aquaculture systems in Southeast Asia depend heavily on informal marketing channels and personal trust rather than formalized supply chains. Such relationships enhance resilience but limit scalability and market diversification. The observed farm doesn't sell fingerlings to middlemen, which can hamper dependency and weak bargaining power (Martono *et al*., 2024)

The farm's value proposition—emphasizing consistent quality and stable pricing—reflects a differentiation strategy that prioritizes reliability over price competition. Maintaining product quality is essential for small-scale producers to remain competitive against industrial operations. By focusing on quality assurance, the farm builds long-term customer trust and mitigates risks from fluctuating market prices.

The distribution channels observed are simple and localized, which is common in small aquaculture businesses. According to Pelamonia and Farida (2023), logistical efficiency significantly affects profitability, with transportation and delivery costs often representing nearly half of total operational expenses. Streamlining logistics could therefore enhance the farm's economic performance.

The cost structure, dominated by feed expenses, is consistent with global aquaculture trends. Feed typically accounts for 50–70% of total production costs (Hasan & New, 2013). Optimizing feed management, through improved feeding schedules or alternative feed formulations, can substantially increase profitability (Price & Egna, 2014).

The presence of research partnerships demonstrates an innovative approach to integrating scientific knowledge into production. Kumar *et al*. (2018) found that collaboration between small-scale farmers and research institutions accelerates technology adoption and improves production efficiency. Such partnerships also contribute to community education and sustainable aquaculture practices. Environmental conditions, particularly high rainfall in Bogor, influence pond stability and fish reproduction. Excessive rainfall can disrupt water

quality and spawning success, emphasizing the need for adaptive infrastructure and water management systems.

Overall, the observed data show that the Pangasius nursery farm operates efficiently within its local context. The integration of technical management, customer relationships, and cost control reflects a balanced approach to sustainability. The Business Model Canvas framework effectively captures these interconnections, illustrating how biological production processes translate into economic outcomes (Osterwalder & Pigneur, 2013).

CONCLUSION

The Pangasius nursery farm demonstrates a sustainable small-scale aquaculture model characterized by local customer networks, consistent product quality, and cost efficiency. Feed management and environmental adaptation remain key challenges. Strengthening logistics and research partnerships can further enhance productivity and profitability.

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