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ARTICLE

Strategic Competitiveness of Thai Agricultural Community Enterprises: A Case Study of Cricket-Based Dog Treats

Chonrada Nunti [1], ***Kewalin Somboon*** [2], ***Varattaya Jangkrajarng*** [3*]

[1] *Faculty of Economics, Chiang Mai University, Chiang Mai 50200, Thailand*

[2] *Faculty of Economics, Maejo University, Chiang Mai 50290, Thailand*

[3] *Department of Management and Entrepreneurship, Chiang Mai University Business School, Chiang Mai University, Chiang Mai 50200, Thailand*

ABSTRACT

This research examines the capacity of cricket-infused dog treats produced by the Organic Farming Community Enterprise of Ban Mae Tad to establish a competitive advantage and explores the formulation of a sustainable community business model grounded in local engagement. The research aims to assess the product's market position by examining both strategic objectives and consumer behaviour. Findings indicate that consumers are open to adapting to novel products like insect-based treats, especially when they align with trends in sustainability and health. This growing acceptance has encouraged the community enterprise to diversify its distribution channels, enhancing market accessibility and resulting in increased revenue. This progress supports the broader aim of achieving the United Nations Sustainable Development Goals (SDGs), particularly those related to poverty reduction and economic resilience in rural communities. Moreover, the study applied the Probit model to analyse key factors influencing consumer purchase decisions. The model shows that a one-point increase in the average perception score regarding product attributes boosts the probability of purchase by 55.48 percent. Likewise, a one-point rise in the perceived value of price increases the purchase probability by 60.99 percent. Both results are statistically significant, underscoring the importance of product quality and pricing in shaping consumer choices. Overall, the

*CORRESPONDING AUTHOR:
Varattaya Jangkrajarng, Department of Management and Entrepreneurship, Chiang Mai University Business School, Chiang Mai University, Chiang Mai 50200, Thailand; Email: varattaya.j@cmu.ac.th

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research highlights the potential for integrating sustainable agricultural practices with innovative product development to enhance local economies. The involvement of the community in business planning ensures long-term viability and aligns with national and global goals for sustainable development and inclusive economic growth.

Keywords: CBMC; Community Enterprise; Competitive Analysis; Probit Model; Dog Treats

1. Introduction

Over the past decade, Thailand's pet food industry has demonstrated consistent and significant growth. Within this sector, the production of dog and cat food has become a crucial component, contributing notably to domestic economic performance and enhancing the country's export capacity. This growth can be attributed to several socio-demographic shifts, the most prominent being the transformation in Thai family structures. Increasingly, households are moving away from traditional, multi-generational living arrangements toward nuclear or single-person households. As a result, many individuals are opting to raise pets as companions, a trend often referred to as pet humanization. In this context, pets are not merely seen as animals but as integral members of the family, deserving of care, affection, and high-quality nourishment. This change in societal attitude has led to a rapid expansion in the demand for pet-related products. With such substantial market potential, businesses, both large and small, have begun to invest in developing diverse and innovative pet food offerings, including functional and premium products that cater to pet health, taste preferences, and owner expectations.

A key aspect of this shift is the increased awareness and concern among pet owners regarding the nutritional quality of the food they provide to their animals. Consumers are now more informed and discerning, often seeking out products that use natural, safe, and nutritious ingredients. Despite meeting basic nutritional standards, many commercially manufactured pet foods and treats continue to employ cost-effective residual materials from meat processing, including bone meal and animal tissue. Over time, frequent consumption of these ingredients may lead to potential health concerns for pets. In response to this growing concern, researchers and entrepreneurs have begun exploring alternative protein sources that are both sustainable and nutritionally rich. One such promising source is cricket protein. Crickets are high in protein, easy to farm, and have a low environmental footprint, making them an attractive alternative to traditional meat-based proteins [1]. In Thailand, this concept has caught the attention of both researchers and community-based enterprises aiming to innovate within the pet food space while promoting sustainable development.

One such initiative is the Organic Farming Community Enterprise of Ban Mae Tad, situated in Huai Sai Subdistrict, San Kamphaeng District, Chiang Mai Province. This community enterprise was established with the primary goal of supporting local farmers in transitioning from chemical-based to organic agriculture. The enterprise also promotes environmentally sustainable practices, including the cultivation and processing of economically valuable insects such as crickets. These insects are used as a key ingredient in innovative products, such as dog treats, which are not only environmentally friendly but also nutritionally beneficial. The Organic Farming Community Enterprise of Ban Mae Tad has collaborated with various government agencies, to receive technical training and support in the production of cricket-based dog treats. Initial experiments and market trials have shown promise, particularly in terms of product safety and acceptance among dogs. Palatability tests conducted with various dog breeds indicated a favourable response to the taste and texture of the cricket-infused treats. Additionally, digestibility tests revealed no significant difference between these treats and conventional ones, confirming their suitability for canine consumption.

Despite the positive reception among pets, the market response has been modest, highlighting the challenges that community enterprises face in entering competitive markets. The group has yet to achieve the desired level of market success, due in part to limitations in production capacity, branding, marketing, and distribution. Nonetheless, the enterprise remains committed to developing a sustainable business model that not only creates economic value for the community but also aligns with broader national and global development goals. Community enterprises like Ban Mae Tad play an increasingly important role in grassroots economic development. They act as engines for local self-reliance and resilience by generating employment, utilizing local resources, and fostering innovation at the village level. These enterprises also align with government policy frameworks aimed at enhancing the role of communities in driving sustainable development, such as Thailand's 20 Year National Strategy (2017–2036), which emphasizes local economic empowerment and environmental stewardship [2].

Given these contexts, this study aims to examine the competitive potential of dog snacks incorporating crickets. The study aims to evaluate the market readiness of such products and to support the development of a comprehensive business plan that is both community-driven and market-oriented. By doing so, the research aspires to provide strategic insights that can guide not only the Ban Mae Tad enterprise but also other similar community-based initiatives seeking to penetrate niche markets with sustainable, locally sourced innovations. To systematically address this objective, the study employs a range of analytical frameworks and methodological tools. First, it examines the internal capabilities and external challenges facing the enterprise using established strategic tools such as the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis and the TOWS matrix. These frameworks allow for a holistic understanding of the enterprise's current position and prospects. Internal factors such as product quality, access to raw materials, and community participation are assessed alongside external factors like market competition, consumer trends, and regulatory support.

Moreover, the research utilizes the Probit model, a statistical technique suitable for analysing binary decision outcomes to examine consumer behaviour and preferences. This model helps identify which product-related and price-related attributes most significantly influence a consumer's decision to purchase cricket-based dog treats. By quantifying these effects, the study provides empirical evidence that can inform marketing strategies and product development. Furthermore, the study incorporates the Community Business Model Canvas (CBMC), a participatory planning tool adapted from the traditional Business Model Canvas but tailored specifically for community enterprises. This model helps the community articulate their value proposition, target customers, key resources, distribution channels, and revenue mechanisms in a way that reflects local strengths and realities. By co-developing the business model with community members, the research ensures that the plan is not only theoretically sound but also practically viable and socially inclusive.

This study aims to fill a critical gap in the existing literature on community-based agricultural innovation by focusing on a real-world case of an organic community enterprise seeking to commercialize an alternative protein product. It contributes to ongoing discussions on sustainable development, grassroots entrepreneurship, and the role of local communities in shaping the future of food systems. The findings from this research are expected to offer actionable recommendations for stakeholders including policymakers, development agencies, academic institutions, and entrepreneurs who are interested in fostering inclusive and sustainable rural economies.

2. Literature Review

Understanding the competitive potential of community-based agricultural enterprises requires a multi-faceted exploration of strategic, economic, and consumer behaviour frameworks. This literature review aims to situate the study within the broader framework of existing scholarly and practical knowledge, specifically in relation to the Organic Farming Community Enterprise of Ban Mae Tad's initiative to develop dog treats incorporating crickets. The emergence of pet humanization trends, increasing demand for sustainable protein sources, and the push for grassroots economic development have created new opportunities for innovation within Thailand's pet food industry. To assess and enhance the enterprise's competitive capacity, this review draws upon key strategic management tools, including SWOT and TOWS analyses, and the Community Business Model Canvas (CBMC) as a participatory planning framework tailored for local enterprises.

Additionally, the review integrates empirical perspectives on consumer behaviour and market readiness, particularly through the application of the Probit model, which helps quantify the influence of product attributes and pricing on consumer decisions. Complementing these strategic tools are insights from the evolving Thai pet food market, where shifts in consumer preferences and purchasing behaviours underscore the importance of aligning product development with market expectations. Overall, this literature review provides a conceptual foundation for analysing the feasibility and strategic direction of introducing innovative, sustainable pet food products through community enterprise models in Thailand.

2.1. Strategic Analysis

Strategic analysis tools are essential for organizations aiming to understand their internal capabilities and external environment. Among these, the SWOT and TOWS matrices are widely recognized frameworks used to identify and leverage strategic factors in business planning and decision-making.

2.1.1. SWOT Analysis

SWOT analysis, an abbreviation consisting of Strengths, Weaknesses, Opportunities, and Threats, is a foundational strategic tool used to analyse both internal and external factors that can impact the performance of an organization [3]. Strengths and weaknesses refer to internal attributes of an organization, while opportunities and threats pertain to the external environment [4]. The framework facilitates a comprehensive situational analysis that informs strategy formulation by balancing internal capabilities against external challenges and prospects. The simplicity and versatility of SWOT have made it a popular tool across various industries and organizational sizes. It supports strategic thinking by enabling stakeholders to visualize critical success factors and areas requiring improvement [5]. However, some scholars argue that SWOT analysis can be subjective and lacks prioritization of factors, which may limit its effectiveness if not combined with other analytical tools [6].

2.1.2. TOWS Matrix

Building upon SWOT, the TOWS matrix offers a more structured approach by focusing explicitly on the strategic implications of the SWOT factors. Introduced by Weihrich, H. [7], the TOWS matrix helps organizations develop actionable strategies by matching internal strengths and weaknesses with external opportunities and threats. Unlike SWOT, which is often descriptive, TOWS is prescriptive, facilitating strategic planning through four types of strategies: SO (strength-opportunity), WO (weakness-opportunity), ST (strength-threat), and WT (weakness-threat). The TOWS matrix guides organizations in leveraging strengths to exploit various opportunities (SO), overcoming weaknesses by capitalizing on opportunities (WO), using strengths to alleviate threats (ST), and minimizing weaknesses to avoid threats (WT) [7, 8]. This dynamic interaction promotes a proactive stance in strategic management.

The integration of SWOT and TOWS matrices allows organizations not only to analyse their environment but also to formulate concrete strategies based on that analysis. Numerous studies demonstrate the applicability of these tools in diverse contexts, including business development, healthcare management, and tourism planning [4, 9]. The combined use enhances decision-making quality by ensuring that strategies are well-grounded in both internal assessments and external realities. Nevertheless, the effectiveness of SWOT and TOWS depends on the accuracy of data and the analytical rigor applied during the process. To improve strategic outcomes, organizations are encouraged to complement these matrices with quantitative methods or scenario analysis [10].

2.2. The Probit Model

The Probit model is a type of regression used to analyse binary outcome variables where the response is limited to two possible outcomes, such as a "yes" or "no" decision. In the context of this study, it is employed to examine the likelihood that a consumer will choose to purchase cricket-infused dog treats.

This model assumes that there is an unobserved (latent) variable that reflects a consumer's propensity or inclination to make a purchase decision. This latent variable is influenced by several observable factors, such as perceptions of product quality, pricing, distribution convenience, and promotional effectiveness. The Probit model estimates how changes in these independent variables affect the probability that the dependent variable equals one indicating a positive purchase decision. One of the key features of the Probit model is that it uses the cumulative distribution function of the normal distribution to estimate probabilities, ensuring that all predicted values fall between 0 and 1. This makes it particularly suitable for modelling decision-making behaviour where outcomes are discrete and mutually exclusive.

In this study, the Probit model enables a quantitative understanding of which factors significantly drive consumer choice. For example, the results show that higher consumer ratings for product attributes and fair pricing are associated with a greater likelihood of purchase. These insights are essential for developing targeted marketing and product strategies to enhance market acceptance of innovative products like insect-based pet treats.

2.3. Community Business Model Canvas (CBMC)

The CBMC represents a framework for designing and managing business operations at the community level. Central to this model is the 'Community Business Plan,' a practical tool developed to support the planning and implementation of community-led enterprises. The CBMC is adapted from the original Business Model Canvas and emphasizes enhancing the efficiency and capacity of local entrepreneurs through capacity building focused on mindset and skillset development. This includes strengthening four key components: Knowledge (K), Skills (S), Networks (N), and Business Models & Operational Plans (B), collectively referred to as the KSNB framework [11].

2.4. Related Research

According to a prominent international market intelligence and consulting firm [12], the pet food industry has demonstrated robust and multidimensional growth, evidenced by increasing market value, expanding consumer bases, and a rising number of industry participants both in Thailand and globally. A study conducted by Kantar, focusing on Thailand's pet food market, identified four key insights. Utilizing data from the Kantar Worldpanel in Thailand, which collects household consumption data including pet ownership, the first notable finding is the growing number of households with pets. A comparison between the third quarters of 2021 and 2022 reveals that pet ownership has increased, with the most significant growth observed in Bangkok and its surrounding areas. While dogs remain the most commonly owned pets, the growth rate of cat-owning households has surpassed that of dog-owning households. Secondly, pet food sales have steadily increased in parallel with the rise in pet ownership. Despite this upward trend, less than half of pet owners currently purchase packaged pet food, indicating substantial untapped market potential. The cat food segment is particularly competitive, with eight major brands controlling 80% of the market share. Conversely, the dog food market is predominantly controlled by five major manufacturers. Notably, cat owners exhibit a greater inclination toward purchasing branded products compared to dog owners, despite the emergence of numerous new brands within the market, consumers generally stick to purchasing only two brands per year. Notably, sales growth is skewed toward cat food, while dog food sales have declined, underscoring the need for new entrants to implement innovative marketing strategies to effectively compete in both segments. The third trend involves the "premiumization" of pet food, with increasing consumer demand for high-end products in both the dog and cat food categories. Although dry food continues to dominate the market, wet cat food though accounting for less than 15% of total sales has experienced more rapid growth compared to wet dog food. This suggests a shift in consumer behaviour that brands must address through deeper market understanding. Premium and super-premium pet foods are experiencing the highest growth, while traditional scoop-style products are being replaced by modern packaging formats. Fourth, the retail landscape for pet food in Thailand is evolving. While Provision Stores and Pet Shops remain the largest distribution channels by sales value, modern trade outlets such as hypermarkets and convenience stores have shown continuous growth. Additionally, online shopping has gained traction, especially among consumers looking to stock up on supplies. Consequently, pet food brands must be strategically positioned across both traditional and modern trade platforms, including e-commerce, to effectively penetrate the Thai market.

In relation to consumer behaviour, several studies have been conducted. One such study [6] explored the purchasing decisions of dog owners when selecting dog snacks, aiming to provide insights for aligning product offerings with market needs. The findings indicated that income level significantly influences consumer decisions. For instance, respondents earning over 40,000 baht per month were more likely to purchase multiple snack varieties simultaneously if unsure about their dog's preferences. If a snack was perceived as beneficial, they would prioritize its function over price. Additionally, dog characteristics such as age, size, and health conditions played a significant role in snack selection. In general, dog owners expected the snacks to offer health benefits, and if these expectations were met, purchasing decisions were made promptly.

Another study [13] examined the factors influencing dog owners' purchasing decisions for dry dog food in Bangkok and nearby regions. The study focused on personal and marketing mixed factors. Most of the respondents were female individuals between the ages of 21 and 30, possessing educational qualifications below the undergraduate level, employed in the private sector, earning between 10,001 and 15,000 baht monthly, and primarily owning small dog breeds. Hypothesis testing revealed statistically significant differences in decision-making based on demographic variables such as age, gender, education level, and number of dogs owned. Furthermore, marketing mix elements including product, price, distribution channels, and promotional strategies significantly affected the purchasing decisions of dog food consumers in the Bangkok metropolitan area. These findings align with broader research on pet food purchasing behaviour in Thailand, which emphasizes the significant influence of socioeconomic factors such as income and age on consumer choices. Higher-income pet owners tend to prioritize quality and health benefits in their selections, while marketing efforts especially influencer credibility and comprehensive marketing mix components play a critical role in shaping consumer preferences [14–18]. Collectively, these studies highlight the complexity of consumer decision-making and the necessity for tailored marketing strategies to effectively target distinct segments within Thailand's pet food market.

Moreover, the application of SWOT (Strengths, Weaknesses, Opportunities, and Threats) and TOWS (Threats, Opportunities, Weaknesses, Strengths) matrix analyses has been widely recognized as an effective strategic planning tool in various fields, including community-based enterprises and product development. SWOT analysis serves as a diagnostic instrument to identify internal capabilities and external environmental factors, while the TOWS matrix facilitates the formulation of strategic responses by aligning these factors [7].

In the context of community enterprises, several studies have demonstrated the utility of SWOT and TOWS frameworks to enhance competitiveness and sustainability. For instance, Phimphachanh, S., and Inthavong, S. [19] utilized SWOT and TOWS analyses to assess the challenges and opportunities faced by a community handicraft cooperative in Laos. Their findings emphasized that leveraging local craftsmanship strengths and government support could effectively capitalize on growing tourism demand, while addressing weaknesses such as limited marketing skills was critical to overcoming market entry barriers. Similarly, a study by Nguyen, H. D., Phuc, V. V., Pham, T. H. D., Le, Q. H., & Ho, H. [20] on sustainable agriculture startups in Vietnam applied SWOT and TOWS frameworks to devise strategic pathways for scaling production and improving market reach. The study highlighted that integration of innovative technologies (a strength) with emerging e-commerce trends (an opportunity) provided substantial growth potential, whereas insufficient capital and competitive pressures necessitated targeted strategies to mitigate risks.

In the pet food industry, the integration of sustainable alternative proteins such as insect-based ingredients is gaining traction globally. Studies such as those by van Huis, A., van Itterbeeck, J., Klunder, H., et al.[21] underline the environmental and nutritional advantages of insect protein, but consumer acceptance remains a significant challenge. Applying SWOT and TOWS analyses in this niche, as demonstrated by Li, X., Zhang, Y., & Chen, Y.[22], allows producers to identify market opportunities driven by premiumization and pet humanization trends, while addressing threats from established brands and limited consumer awareness.

While the existing literature review effectively covers critical aspects of consumer behavior in the pet food industry, strategic frameworks, and the acceptance of alternative proteins[23, 24], enhancing the generalizability of the proposed business model necessitates the integration of comparative examples from diverse international contexts. Examining similar community-based enterprises or alternative protein initiatives in various geographical regions can illuminate common challenges, shared success factors, and unique adaptations, thereby strengthening the broader applicability of insights derived from the Thai context. For example, in sub-Saharan Africa, numerous community-led agricultural initiatives have emerged, often leveraging local resources and indigenous knowledge systems to foster sustainable livelihoods[25]. Studies from countries such as Kenya or Ghana on smallholder farmer cooperatives or traditional food processing enterprises offer pertinent parallels in terms of community mobilization, value chain development, and strategies for market access, even if the specific product differs. These examples frequently underscore the critical importance of local ownership, robust capacity building, and access to appropriate technology in cultivating enterprise resilience and scalability within rural settings. Similarly, Latin American nations, including Colombia and Brazil, have witnessed a proliferation of social enterprises and sustainable agriculture projects that intricately integrate local communities into value chains for niche or innovative products[26]. Research exploring cooperative models in rural areas, or the development of novel food sources, can provide invaluable insights into consumer adoption patterns, regulatory frameworks, and the pivotal role of external support mechanisms in scaling up community-driven ventures. Such cross-national comparisons serve to identify universal principles for successful community-based business models while simultaneously acknowledging the distinct context-specific nuances that may influence their implementation and outcomes. By integrating these international comparative examples, the literature review not only demonstrates a comprehensive understanding of the global landscape of community enterprises and alternative protein development but also significantly strengthens the argument for the potential replicability and adaptability of the business model proposed in this study beyond the specific confines of the Thai market. This broader, comparative perspective enhances both the academic contribution and the practical relevance of the research findings.

The present study on cricket-based dog treats extends this body of knowledge by employing SWOT and TOWS analyses to strategically position a novel product within Thailand's growing pet care market. By systematically identifying internal strengths such as local raw material availability and external opportunities such as national policy support, this research aims to provide actionable strategies for sustainable product development and market penetration.

3. Methodology

This study examined the competitiveness and market viability of dog snacks containing cricket ingredients, utilizing the framework established by the Organic Farming Community Enterprise of Ban Mae Tad to evaluate market preparedness. The research was structured around three main objectives, with specific methodologies employed to address the first objective:

Objective 1: To evaluate the competitiveness and market entry potential of cricket-based dog snacks developed by the Organic Farming Community Enterprise of Ban Mae Tad.

The researchers undertook a systematic process to develop the questionnaire, ensuring its clarity, relevance, and alignment with the study's objectives. To establish the validity of the research instrument, a comprehensive quality assessment was conducted. The initial draft of the questionnaire was submitted for evaluation by three subject matter experts specializing in marketing and consumer behaviour. Their expertise was utilized to assess the content validity of the instrument by calculating the Index of Item-Objective Congruence (IOC) for each questionnaire item in relation to the specific constructs delineated in the research objectives. Based on the feedback provided by the three experts, the consistency between each questionnaire item and the defined research attributes was evaluated. The experts also reviewed the overall content validity, comprehensiveness, appropriateness, and clarity of the questionnaire items. The resulting IOC values for the items ranged from 0.0 to 1.0. In accordance with established guidelines, items with IOC values exceeding 0.50 (IOC > 0.50) were considered to possess acceptable content validity. Subsequently, the researchers refined the questionnaire by incorporating the experts' recommendations to enhance its validity and ensure its suitability for data collection. Following the expert validation process, the questionnaire underwent a pilot test with a small sample of 30 participants whose characteristics were similar to the main study's target population. This pilot test aimed to evaluate question comprehension, clarity of language, and the suitability of response formats, identifying any issues that might lead to confusion or inaccurate data. Feedback gathered from the pilot test was then incorporated to refine the questionnaire further, ensuring its final integrity prior to the main data collection.

To address this objective, data were collected from a sample of 400 Thai individuals aged 25 and above. This sample size was determined based on the population data from the National Statistical Office (2023), which reported a total of 41,445,457 individuals aged 25 to 70 years in 2021 [27]. Using Taro Yamane's formula and a 5% margin of error, a sample size of 400 was deemed appropriate. The data collection aimed to determine the primary market factors affecting consumer purchasing decisions regarding dog snacks infused with crickets. Prior to data collection, all survey participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any point without penalty. Informed consent was obtained from all respondents before they proceeded with the questionnaire, ensuring their understanding and willingness to contribute to the research.

Moreover, to analyse the variables that shape purchasing behaviour toward cricket-infused dog treats., the researcher employed inferential statistical analysis using a Probit model. This model is a type of binary choice model suitable for situations where the dependent variable has two possible outcomes. The model specification is as follows:

$$Y_i = \beta_{1i}X_{1i} + \beta_{2i}X_{2i} + \beta_{3i}X_{3i} + \beta_{4i}X_{4i} + \mu_i \quad (1)$$

Where;

Y_i is the dependent variable, defined as 1 if the respondent chooses to purchase the cricket-based dog treat from the community enterprise, and 0 otherwise.

$\beta_1, \beta_2, \beta_3, \beta_4$ represent the coefficients of the model.

X_1 denotes the average score for product-related factors.

X_2 denotes the average score for price-related factors.

X_3 denotes the average score for distribution channel-related factors.

X_4 denotes the average score for promotional-related factors.

μ is the error term.

$i = 1, 2, \cdots, 400$ represents individual observations in the sample.

The probability that a consumer will choose to purchase the cricket-based dog treat can be calculated using the following equation:

$$prob(Y_i = 1) = \Phi\left(\frac{x_i'\beta}{\sigma}\right) \quad (2)$$

Conversely, the probability that a consumer will not choose to purchase the product is given by:

$$prob(Y_i = 0) = 1 - prob(Y_i = 1) = 1 - \Phi\left(\frac{\mathrm{x}_\mathrm{i}'\beta}{\sigma}\right) \quad (3)$$

In these equations, Φ denotes the cumulative distribution function (CDF) of the standard normal distribution, as described by Greene, W.H. [28]. Additionally, the preparedness of the Organic Farming Community Enterprise of Ban Mae Tad to compete in the cricket-based dog snack market was assessed through a comprehensive SWOT and TOWS matrix analysis.

Objective 2: The objective aimed to formulate a community-driven business plan for cricket-infused dog snacks facilitated by active participation from local stakeholders. Insights derived from the analysis of the Organic Farming Community Enterprise of Ban Mae Tad's cricket-based dog treat product informed the creation of this plan, incorporating contributions and collaboration from community members. Additionally, market testing was conducted to broaden distribution channels and enhance income opportunities for members of the enterprise group.

4. Empirical Results

Next, an analysis was conducted on the competitive potential of the dog snacks containing crickets produced by the Benmatad organic agriculture community enterprise.

4.1. Influential Market Variables on Consumer Buying Patterns of Cricket-Based Dog Treats

An analysis of data obtained from 400 dog owners who purchased dog snacks in the past year identified various demographic and behavioural patterns. Most respondents were female, reporting an average monthly income between 30,001 and 50,000 baht. Most participants were employed as state enterprise employees or civil servants, predominantly single, and possessed at least a bachelor's degree. Despite efforts to ensure a robust sample size, the demographic composition of the respondents exhibited a potential skew towards specific socioeconomic strata, which warrants consideration as a limitation. Specifically, the observed predominance of female participants, those with monthly incomes between 30,001 and 50,000 baht, employment in state enterprises or civil service, and a bachelor's degree or higher, suggests a sample that may not fully represent the broader spectrum of Thai dog owners. These characteristics might influence purchasing behaviours and acceptance of novel products like cricket-based dog treats differently compared to other demographic segments. Consequently, while the findings offer valuable insights into the preferences of this particular consumer group, their direct generalizability to segments of the population with significantly different income levels, educational backgrounds, or occupational profiles should be interpreted with caution. Future research could enhance external validity by employing stratified sampling techniques or oversampling specific demographic groups to achieve a more balanced representation across all socioeconomic categories.

Regarding dog-raising behaviours, findings indicate that most owners regard their dogs as family members, a phenomenon consistent with the concept of pet humanization documented in previous research [13]. The sample predominantly raised two to three medium-sized dogs, weighing between 11 and 25 kilograms, with an average age of one to five years. The predominant preference for dog snacks was centred on dental health benefits, particularly those aimed at polishing the dogs' teeth, as presented in **Table 1**.

Regarding the purchasing behaviours of the sample group, the primary motivation for buying dog snacks was the dogs' preferences, with the most significant concern being the flavours preferred by the dogs. Additional factors affecting purchasing decisions encompassed price and nutritional content, which were regarded as secondary considerations. The majority of respondents reported purchasing dog snacks on a monthly basis, primarily from general pet supply stores. Family members emerged as the most influential figures in shaping consumers' purchasing decisions. On average, the expenditure per transaction was approximately 200 baht or higher, as presented in **Table 2**.

An examination of the collected data with respect to the market factors that impact consumers' choices in selecting dog snack products indicates that the primary consideration among most dog owners was affordability, with an average importance rating of 4.33. This was followed by product quality and attributes. The product received an average rating of 4.15. Distribution channels were rated moderately influential, with an average score of 3.88, whereas marketing promotions were perceived as less impactful, receiving an average rating of 3.64, as presented in **Table 3**.

Table 1. Dog-rearing Behaviours of the Sample Group.

Dog Raising Behaviour		Quantity	Percentage
The status of the dog in your family	Be a family member	145	72.5
	As a pet (raised to watch over the house, etc.)	55	27.5
Number of dogs you raise	1 dog	80	40.0
	2–3 dogs	94	47.0
	3–5 dogs	20	10.0
	More than 5 dogs	6	3.0
Size of your dog (Choose more than 1 answer)	X-Small (1–5 kg.)	56	25.2
	Small (6–10 kg.)	32	14.4
	Medium (11–25 kg.)	88	39.6
	Large (26–45 kg.)	44	19.8
	X- Large (more than 45 kg.)	2	0.9
Age of dog	1–5 years	90	45.0
	5–7 years	30	15.0
	7–10 years	48	24.0
	More than 10 years	32	16.0
Type of dog snacks you choose to buy (You can answer more than 1 question)	dog dental snacks	138	36.1
	Dog snacks: dry chicken tenderloin, Dried Chicken	104	27.2
	Biscuits for dogs	54	14.1
	Fish snacks for dogs	40	10.5
	Human snacks	14	3.7
	Dog snacks in bar type	12	3.1
	Dog snacks in cowhide type	8	2.1
	Dog snacks in Fish type for dogs allergic to chicken	6	1.6
	Licking snacks	6	1.6

Source: Author's estimations.

Table 2. Dog Snack Purchasing Behaviour.

Dog Snack Purchasing Behaviour		Quantity	Percentage
Types of dog snacks that you choose to buy	Dog dental snacks	138	36.1
	Dry chicken tenderloin, Dried Chicken	104	27.2
	Biscuits for dogs	54	14.1
	Fish snacks for dogs	40	10.5
	Human snacks	14	3.7
	Dog snacks in bar type	12	3.1
	Dog snacks in cowhide type	8	2.1
	Dog snacks in Fish type for dogs allergic to chicken	6	1.6
	Licking snacks	6	1.6
What is the most important reason to buy snacks for your dog?	Dog's preference	92	46.0
	Health aspects, e.g., helping to floss dogs' teeth as a dietary supplement for dogs, etc.	74	37.0
	For training dog discipline	18	9.0
	Stimulate the dog's food intake	10	5.0
	For the happiness of the dog	6	3.0
Types of dog snacks that you choose to buy	Dog dental snacks	138	36.1
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	Licking snacks	6	1.6

Table 2. *Cont.*

Dog Snack Purchasing Behaviour		Quantity	Percentage
What is the most important reason to buy snacks for your dog?	Dog's preference	92	46.0
	Health aspects, e.g., helping to floss dogs' teeth as a dietary supplement for dogs, etc.	74	37.0
	For training dog discipline	18	9.0
	Stimulate the dog's food intake	10	5.0
	For the happiness of the dog	6	3.0
What is your first consider when buying dog treats?	Dog's favourite flavour	56	28.0
	Reasonable price	54	27.0
	Nutritional value	52	26.0
	Packing quantity	18	9.0
	unseasoned	6	3.0
	The nutritional value that dogs will receive according to their age	6	3.0
	Place of distribution	6	3.0
	Appearance of dessert, smell	2	1.0
How often do you buy dog snacks?	1 time per month	75	37.5
	1 time per week	26	13.0
	2 times per month	79	39.5
	1 time per 2 months	8	4.0
	1 time per 5 months	8	4.0
	1 time per 4 months	2	1.0
	Everyday	2	1.0
Where do you most frequently purchase dog snacks?	General animal feed store	145	72.5
	Online shopping	26	13.0
	Convenience stores e.g., 7-11, Lotus Express	23	11.5
	Massive retail stores such as Makro, Lotus	6	3.0
The most powerful person in purchasing dog snacks.	Family members	112	56.0
	Salesperson	30	15.0
	Myself	42	21.0
	Friends/acquaintances	10	5.0
	Veterinarian	6	3.0
The amount that you pay each time when buying dog snacks	Less than 30 Baht	6	3.0
	30 – 50 Baht	25	12.5
	50 – 100 Baht	57	28.5
	101 – 200 Baht	34	17.0
	More than 200 Baht	78	39.0

Source: Author's estimations.

Table 3. Factors Affecting Purchasing Decisions.

Factors Affecting Purchasing Decisions	Average	Interpret
Product factors	**4.15**	**Good**
It is a well-known and trustworthy brand.	3.49	Average
Contains essential nutrients	4.15	Good
Using quality raw materials	4.34	Good
Fully inform the details of the product components.	4.39	Excellent
Special properties have been clearly announced, such as high protein and calcium, etc.	4.40	Excellent
Price factor	**4.33**	**Good**
The price is appropriate for the quality of the product.	4.31	Good
The price is appropriate for the quantity.	4.34	Good
Distribution channel factors	**3.88**	**Average**
The sales location is close to residence or workplace and convenient to buy.	4.22	Good
The sales location has convenient parking.	3.90	Average
Sales locations are decorated and clean.	3.51	Average

Table 3. *Cont.*

Factors Affecting Purchasing Decisions	Average	Interpret
Marketing promotion factors	**3.64**	**Average**
Organize advertisements through various media regularly.	3.41	Average
Employees or veterinarians can clearly give advice or recommend product features.	3.77	Average
Organize sales promotions regularly, e.g., price reductions, free product samples, coupons, freebies, sweepstakes, etc.	3.76	Average
Additional information service by phone or Line application is fast and answers all questions completely.	3.62	Average

With respect to consumer interest in cricket-infused dog snacks, the findings revealed that approximately 83% of respondents indicated a willingness to purchase the product, whereas 17% expressed disinterest. Furthermore, the data suggest that a majority of the sample population demonstrated a favourable attitude towards making a purchase, reflecting a significant market potential for this product as shown in **Table 4**

Table 4. Consumer Interest in Cricket-Infused Dog Snacks.

Consumer Interest in Cricket-Infused Dog Snacks		Quantity	Percentage
Regarding product samples Cricket-Infused Dog Snacks sell for 30 baht per piece.	Not purchase	34	17.0
	Purchase	166	83.0
Are you interested in Cricket-Infused Dog Snacks?	Indifferent	34	17.0
	Not really interested	14	7.0
	Interested	138	69.0
	Extremely Interested	14	7.0

Source: Author's estimations.

Based on the survey results, the participants offered several suggestions regarding the product. The majority of comments centred on the pricing, with participants perceiving the product to be relatively expensive compared to alternative options available in the market. Additionally, concerns were raised regarding potential allergic reactions to insect-derived proteins, such as crickets. Participants further suggested increasing the product quantity to more appropriately correspond with the current selling price, thereby improving its perceived value, as presented in **Table 5.**

This study employed a Probit regression model to examine the factors influencing consumers' purchase decisions regarding the cricket-infused dog treats produced by the Organic Farming Community Enterprise of Ban Mae Tad. The analysis focused on two primary latent variables: product attributes and price perception.

The estimated Probit model revealed that a one-unit increase in the average score of the product factor significantly increases the probability of consumers choosing the cricket-infused dog treats by approximately 55.48%. Similarly, a one-unit increase in the average score of the price factor raises the purchase probability by about 60.99%, indicating strong statistical significance. These findings suggest that the intrinsic qualities of the product, including brand reputation, perceived trustworthiness, nutritional content, and clear disclosure of ingredients and special features, play a critical role in enhancing consumer preference. Furthermore, consumers' sensitivity to price fairness where price is perceived as commensurate with the quality and quantity offered also substantially affects their purchase likelihood.

Consequently, the implementation of strategic communication that highlights the distinctive features and nutritional advantages of the product, combined with competitive and transparent pricing strategies, is crucial to enhance market penetration and foster consumer acceptance of the cricket-infused dog treats produced by the Ban Mae Tad Organic Farming Community Enterprise. **Table 6** presents the detailed coefficients and marginal effects derived from the Probit model analysis, confirming the significant impact of these factors on consumer choice behaviour.

Table 5. Suggestions for Cricket-Infused Dog Snacks.

Suggestions for Cricket-Infused Dog Snacks	Quantity	Percentage
Priced at a higher level relative to comparable products available in the market.	18	34.6
Not sure about your dog's insect allergy?	8	15.3
Increase the quantity to suit the price.	6	11.5
Reframing the product description from "mixed with cricket" to "chicken flavour mixed with crickets" may enhance its perceived value and make the offering appear more acceptable to consumers. This phrasing emphasizes the familiar and appealing "chicken flavour" while presenting the inclusion of crickets as a complementary ingredient, which can encourage greater openness to experimentation and reduce potential aversion associated with insect-based ingredients.	6	11.5
Test the first market with 2 sizes. Customers may buy the smaller size since they raise small breed dogs or try the testing product then back and buy a bigger one later.	6	11.5
Make the packaging more attractive.	6	11.5
Increase the ratio of crickets	2	3.8

Source: Author's estimations.

Table 6. The Detailed Coefficients and Marginal Effects Derived from the Probit Model Analysis.

Factors Affecting Purchasing Decisions	Coefficient	Std. Error	z-Statistic	Prob.
Product Factors	0.5548**	0.2444	2.2696	0.023
Price Factors	0.6099***	0.1960	−3.1109	0.002
Distribution Channel Factors	0.2588	0.2150	1.2039	0.228
Marketing Promotion Factors	0.0894	0.2018	0.4431	0.657

Source: Author's estimations.
Note: *** Significant at 1 percent level, ** Significant at 5 percent level, * Significant at 10 percent level.

4.2. An Assessment of the Organic Farming Community Enterprise of Ban Mae Tad's Readiness to Compete in the Market for Cricket-Infused Dog Snacks was Conducted Using SWOT Analysis and the TOWS Matrix

This section presents a SWOT analysis of the cricket-based dog treat product developed by the Baan Mae Tad Organic Agricultural Community Enterprise. The analysis identifies the internal and external factors affecting the development and competitiveness of the product.

Strengths: The enterprise possesses several key strengths that support the development of cricket-based dog treats. Notably, it receives ongoing support from government agencies and academic institutions, particularly in the areas of product development and the transfer of production technology. For example, the Department of Livestock Development has contributed to enhancing production efficiency. Furthermore, the enterprise has a stable and sufficient supply of cricket protein sourced from its own farming operations. Labor availability within the local community is adequate to support the production process. In addition, consumer behaviour trends such as pet humanization have led to increasing demand for high-quality, nutritionally rich pet products. This socio-cultural shift presents a favourable environment for the development of innovative pet food products such as cricket-based treats.

Weaknesses: Despite its strengths, the enterprise also faces several internal challenges. The current production process is largely manual, particularly in the shaping and moulding of treats, resulting in inconsistent product quality especially in thickness and texture. The available machinery is not sufficiently advanced to support scalable production, which hinders mass manufacturing potential. Moreover, the enterprise lacks experience in marketing and has not yet established formal distribution channels. These limitations make it difficult to compete with larger producers in terms of both price and product quality.

Opportunities: There are numerous market opportunities for cricket-based dog treats. The increasing humanization of pets in Thailand has expanded demand for high-quality and health-oriented pet products. As reported by the Thai Pet Products Industry Association and the USDA (2021) [29], Thailand had an estimated pet population of approximately 14.5 million in the year 2020, with dogs comprising the majority. This growing market presents an opportunity for new and differentiated pet food products. Additionally, the trend toward "premiumization" in pet products creates space for niche products that emphasize nutritional benefits, such as those containing alternative protein sources like crickets. The rise of digital marketing and e-commerce also provides accessible and cost-effective channels for product promotion and distribution. Furthermore, government policy particularly the 20-Year National Strategy (2017–2036) supports community-based enterprises by fostering entrepreneurship, upgrading production capabilities, and promoting grassroots economic development, which can help facilitate market entry for community-based products.

Threats: However, several external threats may hinder the product's success. The pet food market in Thailand is highly competitive, dominated by established brands with significant market share and marketing power. There is also an influx of new, smaller brands entering the market. Consumer awareness and acceptance of insect-based protein for pet food remains relatively low, which may pose a challenge for product positioning and market adoption. Entry into modern trade and online markets requires investment in packaging, logistics, and brand development, which may be financially burdensome for the enterprise. Without standardized product quality and strong branding, the enterprise may struggle to sustain a competitive advantage in the long term. as presented in **Table 7**.

Table 7. SWOT Analysis of Cricket-Based Dog Treats.

Strengths	Weaknesses
S1. Support from government agencies and academic institutions for product development S2. Availability of cricket protein from local farming operations S3. Adequate labour force within the community S4. Increasing demand due to pet humanization trends	W1. Manual production process resulting in inconsistent product quality W2. Lack of modern machinery for scalable and standardized production W3. Absence of formal marketing strategies and distribution networks W4. Limited capacity to compete with established brands in terms of price and quality
Opportunities	**Threats**
O1. Expanding pet ownership and spending behaviour in Thailand O2. Emerging trend toward premium pet products O3. Growth of online marketing and e-commerce platforms O4. Government support via the 20-Year National Strategy for community-based economic development	T1. Highly competitive market dominated by large, established brands T2. Low consumer awareness of insect-based protein in pet foods T3. Financial constraints in entering modern trade and digital markets T4. Risk of limited long-term competitiveness without strong branding and standardized product quality

The TOWS Matrix facilitates the generation of strategic responses by aligning strengths and weaknesses with opportunities and threats.

Strengths-Opportunities (SO) Strategies: The enterprise should leverage its strengths to capitalize on identified opportunities. Governmental and academic partnerships can be utilized to develop premium dog treat products that resonate with pet humanization trends. Furthermore, the community's resource availability and labour capacity enable scaling production to serve modern trade and e-commerce channels. Emphasizing sustainability and product quality aligns well with growing consumer demand for eco-friendly pet foods.

Strengths-Threats (ST) Strategies: To counteract external threats, the enterprise can capitalize on internal strengths such as its integrated cricket farming and production expertise to differentiate its products amidst market saturation. Collaboration with academic partners can facilitate consumer education to improve acceptance of cricket protein. Highlighting product traceability and sustainability will provide competitive advantages in a crowded marketplace.

Weaknesses-Opportunities (WO) Strategies: Addressing internal weaknesses by harnessing external opportunities is critical. The enterprise should pursue investments or partnerships to acquire modern production technologies, thus improving product consistency. Engaging digital marketing platforms and pet industry influencers can help overcome marketing deficiencies. Additionally, leveraging government training programs will enhance branding and promotional capabilities.

Weaknesses-Threats (WT) Strategies: Minimizing vulnerabilities requires strategic efforts to standardize production processes to ensure quality control, thereby bolstering consumer confidence. Building a strong brand identity is necessary to withstand competition from well-established players. Positioning the product as a niche offering in sustainable and insect-based pet nutrition can reduce direct price competition and enhance market differentiation.

Table 8 shows the TOWS Matrix analysis, which reveals that the cricket-based dog treat product holds significant growth potential, contingent upon strategic leveraging of strengths and opportunities while effectively mitigating weaknesses and threats. The enterprise's future success will depend on improving production efficiency, elevating consumer awareness through education and marketing, and capitalizing on government and policy support. Through these efforts, the Baan Mae Tad Organic Agricultural Community Enterprise can establish a sustainable competitive advantage within Thailand's emerging alternative protein pet food market.

4.3. Community Business Model Canvas

Drawing on the insights from Section 4.1, which investigated determinants influencing both demand and supply aspects, The research team jointly formulated a community-oriented business plan aimed at fostering long-term sustainability. The implementation outcomes of this plan are illustrated in **Table 9** and are discussed in detail below.

Table 8. TOWS Matrix of Cricket-Based Dog Treats.

	Opportunities (O)	**Threats (T)**
Strengths (S)	**SO Strategies** (Using strengths to exploit opportunities)	**ST Strategies** (Using strengths to minimize threats)
	Leverage government and academic support to develop premium products that align with pet humanization trends (S1, S4 → O2)	Use existing cricket farming and production know-how to differentiate product in competitive market (S2 → T1)
	Utilize adequate local labour and raw materials to expand production via online and modern trade platforms (S2, S3 → O3)	Collaborate with academic institutions to raise awareness and educate consumers on the benefits of cricket protein (S1 → T2)
	Position product as a sustainable and healthy alternative in response to rising demand for quality pet products (S4 → O1, O2)	Highlight traceability and sustainability as unique selling points against larger, less agile competitors (S2 → T3)
Weaknesses (W)	**WO Strategies** (Overcoming weaknesses by exploiting opportunities)	**WT Strategies** (Minimizing weaknesses to avoid threats)
	Seek public or private investment for machinery upgrades through government development initiatives (W1, W2 → O4)	Develop standardized production methods to improve product quality and consistency (W1, W2 → T4)
	Partner with e-commerce platforms and pet influencers to overcome lack of distribution and marketing experience (W3 → O3)	Build brand identity with support from local agencies to establish competitiveness against known brands (W3, W4 → T1)
	Use government support to train staff in digital marketing and branding (W3 → O4)	Establish niche positioning in insect-based pet nutrition to reduce direct price competition (W4 → T1, T2)

Table 9. The CBMC of Cricket-Infused Dog Snacks by the Organic Farming Community Enterprise of Ban Mae Tad.

<table>
<tr>
<td rowspan="2">Key Partners

Retail chains such as Lotus and Makro offering fresh chicken products

Local markets specializing in fresh meat sales

Logistics providers for online order fulfilment

Support from government agencies and community development institutions</td>
<td>Key Activities

Brand building and launching promotional campaigns

Product innovation to meet market trends and customer needs

Expansion of distribution through latest sales channels</td>
<td rowspan="2">Value Proposition

High nutritional value and use of natural, locally sourced ingredients

Free from artificial additives and safe for animal consumption

Supports dental health, behavioural training, and pet well-being

Affordable pricing relative to quantity and quality

Convenient and ready-to-use, saving time for pet owners</td>
<td>Customer Relationships

Charitable outreach for stray and disadvantaged animals

Combines digital and traditional marketing methods

Participates in events and expos with free samples and promotions</td>
<td rowspan="2">Customer Segments

Pet owners who treat pets as family members (“pet parents”)

Inclusive of all genders, including LGBTQ+

Primarily nuclear households, especially childless or with adult children</td>
</tr>
<tr>
<td>Key Resources

Financial capital for operational continuity

Production equipment, particularly for roasting and processing

Skilled human resources including production and administrative staff</td>
<td>Channels

Online Platforms: Shopee, Lazada, Facebook, Line OA, company website

Offline Channels: Pet shops, animal feed stores, veterinary clinics, grooming salons, Makro, Lotus</td>
</tr>
<tr>
<td colspan="2">Cost Structure
Raw materials (cricket flour, chicken, ingredients)
Labor costs (production and management)
Logistics and transportation
Production expenses (machinery, utilities, packaging)
Marketing and promotional activities
Administrative overhead (rent, utilities, accounting)</td>
<td colspan="3">Revenue Structure
Product sales of cricket-based dog treats
Revenue through online channels (e.g., Shopee, Lazada, Facebook)
Sales via offline stores and retail chains
Event-based income from markets and expos
Future opportunities: subscription services, bulk sales, private labelling</td>
</tr>
</table>

Community enterprises play an essential role in advancing local economies, particularly in rural Thailand where grassroots innovation and sustainable practices are increasingly emphasized in national development agendas. The Organic Farming Community Enterprise of Ban Mae Tad represents a prime example of such an initiative, combining organic agriculture with alternative protein innovation in the pet food industry. We analyse the enterprise's business model using the nine components of the Business Model Canvas framework, emphasizing how each component contributes to its competitive advantage and long-term viability as follows:

Key Partners: The foundation of the enterprise's success lies in its ability to forge strategic partnerships with various stakeholders. Key partners include prominent retail chains such as Lotus and Makro, which not only supply fresh chicken but also serve as potential distribution platforms. Local markets further support the supply chain by providing raw materials sourced within the region. Logistics and delivery service providers play a vital role in ensuring efficient fulfilment of online orders, while government agencies and community development organizations offer institutional support through training, policy guidance, and technical resources. These partnerships enhance the enterprise's supply chain efficiency, market access, and knowledge base.

Key Activities: The enterprise engages in a series of interrelated core activities aimed at sustaining operations and driving growth. These include branding, promotional campaigns, and continuous product innovation. By actively engaging in marketing, the enterprise enhances consumer awareness and brand visibility. Product development is driven by evolving market trends and health-conscious consumer preferences, particularly within the growing pet care segment. Furthermore, the enterprise is committed to expanding its distribution network through both digital and physical channels, thereby increasing product accessibility and market penetration.

Key Resources: To support these activities, the enterprise relies on a combination of tangible and intangible resources. Financial capital is critical to cover operational and marketing costs. Specialized equipment for roasting and processing ensures product consistency and quality. In addition, a trained workforce comprising both production and administrative personnel is essential to maintain efficient business operations. These resources are strategically leveraged to uphold product standards and respond effectively to market demands.

Value Proposition: At the heart of the enterprise's strategy is its compelling value proposition, which integrates nutrition, sustainability, and convenience. The cricket-based dog treats are formulated using high-quality, locally sourced ingredients, and are entirely free from artificial additives. The product supports pet dental health, facilitates training, and enhances overall well-being. These attributes resonate strongly with pet owners who prioritize health, ethics, and environmental sustainability. The treats are also competitively priced, offering excellent value for money in terms of both quantity and quality. Moreover, the ready-to-use format appeals to modern consumers seeking convenience.

Customer Relationships: The enterprise builds and maintains strong customer relationships through a combination of social engagement and strategic communication. It participates in charitable efforts, particularly those supporting stray and disadvantaged animals, thereby enhancing its public image and community connection. Its marketing approach spans both digital and traditional media, enabling it to reach a wide and diverse customer base. Furthermore, participation in pet-related events and expos, where free samples and promotional items are offered, helps foster trust and brand loyalty.

Channels: A multichannel distribution strategy ensures that the enterprise reaches consumers through a variety of touchpoints. Online sales are facilitated through platforms such as Shopee, Lazada, Facebook, and the Line Official Account, as well as the enterprise's own website. These platforms allow for direct-to-consumer transactions and provide a scalable sales infrastructure. Offline channels include pet shops, grooming salons, veterinary clinics, and major retail outlets like Makro and Lotus. This dual-channel approach maximizes visibility, enhances consumer convenience, and diversifies revenue streams.

Customer Segments: The enterprise targets a clearly defined customer segment: pet owners who regard their animals as family members, often referred to as "pet parents." This group is typically health-conscious, socially aware, and willing to invest in high-quality pet products. The customer base includes individuals of all genders and is notably inclusive of LGBTQ+ communities. Demographically, the enterprise primarily appeals to nuclear households especially those without young children who tend to allocate a greater share of discretionary income toward pet care and lifestyle products.

Cost Structure: The cost structure of the enterprise is composed of several primary components. Raw material costs include the procurement of cricket flour, chicken, and other ingredients. Labor costs encompass wages for both production and administrative staff. Logistics expenses are incurred through transportation and distribution services. Production costs consist of energy consumption, equipment maintenance, and packaging. Marketing costs are allocated to advertising and promotional efforts, while administrative overheads include rent, utilities, and professional services such as accounting and legal compliance. Effective management of these costs is essential to maintain competitive pricing and ensure financial sustainability.

Revenue Structure: The enterprise's revenue model is diversified across multiple sales channels. The primary source of income derives from direct sales of cricket-based dog treats. Online sales through e-commerce platforms and social media constitute a growing share of total revenue. Offline sales are generated via partnerships with physical retailers. In addition, event-based sales from participation in fairs, expos, and community markets provide supplementary income. Looking ahead, the enterprise anticipates future revenue opportunities through subscription models, bulk purchasing arrangements, and private-label production, all of which offer potential for scalable growth.

The Organic Farming Community Enterprise of Ban Mae Tad demonstrates a robust and innovative approach to community-based business development. By aligning local agricultural strengths with market-driven innovation in the pet food sector, the enterprise has established a sustainable and socially responsible business model. Through strategic partnerships, diversified revenue channels, and a clear value proposition, the enterprise is well-positioned to navigate competitive market dynamics and expand its impact. The Business Model Canvas framework not only provides insight into the internal logic of the enterprise but also highlights the replicability of such models in similar rural contexts across Thailand and beyond.

5. Discussion

The study of cricket-based dog treats produced by the Organic Farming Community Enterprise of Ban Mae Tad offers a compelling case of how rural innovation, sustainable agriculture, and shifting consumer behaviour can intersect to create new market opportunities for community enterprises. One of the most significant findings in the research is the impact of consumer behaviour trends, particularly the rise of "pet humanization." Consumers increasingly treat their pets as family members, which has reshaped the pet food market in Thailand and globally. This shift has led to rising demand for premium, nutritious, and safe pet products, aligning well with the unique selling proposition of cricket-infused dog treats, which are high in protein, sustainable, and novel. The data shows that 83% of surveyed consumers are willing to purchase the product, and 69% express clear interest an encouraging signal for market penetration.

Another key element of the discussion is the empirical evidence from the Probit model analysis, which quantifies the influence of different factors on purchase intention. The results show that both product quality and pricing perception significantly affect consumer decisions. These findings align with prior research in the pet food industry, indicating that pet owners prioritize nutritional value, transparency, and price fairness. The product's detailed labelling, high-protein content, and eco-friendly positioning appeal to educated consumers, especially in urban and semi-urban areas where pet humanization is most prevalent.

On the supply side, the study reveals the strengths of the Ban Mae Tad community in terms of local raw material availability (cricket farming) and support from government and academic institutions. These relationships provide technical training and knowledge transfer, which are crucial for grassroots enterprises aiming to introduce innovative products. However, the enterprise faces several internal limitations that must be addressed. The manual production process limits scalability and leads to inconsistent quality, especially in product thickness and texture. In a competitive market dominated by large corporations with advanced machinery, consistent quality is critical to consumer trust. Furthermore, the group lacks formal experience in marketing, packaging, and distribution factors that are essential for product positioning and brand building.

The SWOT and TOWS analyses highlight how these internal weaknesses intersect with external threats such as low consumer familiarity with insect protein, intense market competition, and barriers to entering modern trade or online platforms. Despite growing interest in sustainable proteins, a lack of consumer education remains a hurdle. This is evident in the survey findings, where some consumers express concerns about insect allergies or find the price-point uncompetitive. To address these issues, the TOWS analysis suggests several strategic pathways:

SO strategies (strength-opportunity): Leverage academic partnerships and government support to produce premium, sustainable treats and promote consumer education on insect protein benefits.

WO strategies (weakness-opportunity): Invest in machinery and packaging technology using government support to improve production standardization.

WT strategies (weakness-threat): Build branding and digital marketing capacity to differentiate the product from mass-market competitors.

ST strategies (strength-threat): Use existing expertise in cricket farming to emphasize traceability and sustainability in branding.

An important contribution of this research is the development and application of the Community Business Model Canvas (CBMC). By incorporating participatory planning with local stakeholders, the enterprise is not only developing a business model tailored to its context but also enhancing community ownership and economic resilience. This bottom-up approach strengthens the link between sustainable agriculture and rural enterprise, echoing national policies such as the 20-Year National Strategy (2017–2036) and supporting the UN Sustainable Development Goals (SDGs), particularly those on poverty alleviation and sustainable production. Lastly, consumer feedback suggests valuable improvements, including rebranding the product name, introducing trial-size options, and enhancing packaging practical recommendations that reflect real market expectations and can be implemented at low cost. In response to the identified need for more detailed technical information regarding production scalability, this study acknowledges that the current manual production process constrains the enterprise's capacity to approximately 50–70 units per day. To achieve production volumes that are competitive with larger industrial producers, it is estimated that investing in small-scale machinery for mixing, forming, and baking could expand daily output to between 300 and 500 units. The initial investment required for such equipment is projected to range from 150,000 to 200,000 THB, which may be partially offset through government support programs aimed at fostering rural innovation. Providing this level of detail offers clearer guidance for future operational planning, cost management, and break-even analysis, thereby enhancing the technical and financial feasibility of the proposed scalability strategy.

6. Conclusions

A study examining the competitive landscape of cricket-infused dog treats produced by the Organic Farming Community Enterprise of Ban Mae Tad has illustrated both the viability and limitations of community-based agricultural innovations in a niche but growing market pet food with alternative protein sources. The first conclusion is that market trends such as "pet humanization" and growing concern for pet health are major opportunities. The study confirms that a majority of consumers now treat pets as family members and are willing to invest in premium, health-oriented, and sustainable products. This trend creates fertile ground for differentiated pet food products like cricket-infused dog treats. The enterprise is well-positioned to capitalize on this, given its organic farming background and sustainable insect protein sourcing.

Secondly, the Probit model analysis offers strong empirical support for two key purchase drivers: product quality and price perception. A one-unit increase in consumer perception of product attributes led to a 55.48% increase in purchase probability, while a similar increase in price value perception led to a 60.99% increase. These findings affirm the importance of ensuring consistent quality, transparent ingredient information, and competitive pricing in building consumer trust and boosting sales.

Thirdly, the study's SWOT and TOWS analyses demonstrate that while the enterprise has meaningful strengths such as government support, local raw materials, and growing consumer interest it must also address significant weaknesses, particularly in production standardization, branding, and distribution. The absence of modern machinery leads to inconsistent product texture, and the lack of marketing experience limits brand reach. Without addressing these operational gaps, the enterprise risks falling behind in a highly competitive market dominated by established brands. In terms of strategic planning, the development of a Community Business Model Canvas (CBMC) allowed the research team and community to co-create a practical, locally-driven business plan. This participatory approach ensures not only economic viability but also community ownership and sustainability. It supports the United Nations Sustainable Development Goals (SDGs), particularly those related to poverty reduction, economic resilience, and sustainable consumption. The research further reveals that consumer hesitations such as concerns over insect protein allergies, high prices, and unfamiliar product formats must be strategically addressed through marketing communication, product design, and education campaigns. Suggestions like modifying product descriptions and offering trial sizes illustrate the potential to overcome psychological and behavioural barriers.

In conclusion, the Organic Farming Community Enterprise of Ban Mae Tad shows promising potential to thrive in the alternative pet food market. However, its success hinges on addressing internal weaknesses, leveraging external opportunities, and implementing data-driven strategies. Strengthening production capabilities, branding, and consumer education, while expanding distribution via online and retail channels, will be essential for long-term competitiveness. This case study serves as a model for how community enterprises can integrate local resources, innovation, and participatory planning to build resilient, sustainable rural economies in Thailand and beyond.

Author Contributions

Conceptualization, C.N. and V.J.; methodology, C.N., K.S. and V.J.; software, C.N.; validation, C.N., K.S. and V.J.; formal analysis, C.N.; investigation, C.N., K.S. and V.J.; resources, C.N.; data curation, C.N. and V.J.; writing—original draft preparation, C.N.; writing—review and editing, C.N., K.S. and V.J.; visualization, C.N. and V.J.; supervision, C.N. and V.J. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Conflicts of Interest

The authors declare no conflict of interest.

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