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Development, Validation and Culinary Exploration of Lapin-Based Recipe Book: A Comprehensive Guide for Sustainable Cuisine

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Abstract

The world today faces major challenges such as food insecurity, environmental degradation, poverty, and health issues caused by poor diets. In the Philippines, one promising yet underutilized solution is rabbit meat or lapin, which is known as a healthy, high-protein, and environmentally sustainable meat option. This study focused on the development, validation, and culinary exploration of a Lapin-based recipe book titled "Tradition Meets Sustainability: A Lapin-Based Filipino Recipe Guide" to promote rabbit meat as a sustainable and affordable food source. The study supports Sustainable Development Goal (SDG) 1: No Poverty by exploring rabbit meat as a potential livelihood and income-generating opportunity through rabbit production, food processing, and culinary entrepreneurship. It also contributes to Sustainable Development Goal SDG 2: Zero Hunger by promoting an accessible, nutritious, and sustainable alternative source of protein that may help improve food availability and nutrition. The sensory evaluations revealed high acceptability across all dishes, with most rated as "Like Very Much" to "Like Extremely" in terms of taste, aroma, texture, consistency, and general appeal. The dish Sweet and Sour Lapin received the highest sensory rating (mean = 9.00), while other dishes such as Kaldereta, Lechon, and Sisig also received excellent feedback. The developed recipe book underwent content and format validation and achieved high overall mean scores among respondents (M = 31.71) and experts (M = 32.29), confirming its clarity, presentation quality, and instructional value. The return on investment (ROI) analysis showed profitability across the developed dishes, with Sweet and Sour Lapin yielding the highest ROI at 86.84%. This demonstrates the potential of rabbit-based food products not only as nutritious meal options but also as possible income-generating products for households, small food businesses, and local entrepreneurs. These findings support the culinary viability and market potential of rabbit meat in Filipino cuisine. The validated recipe book offers a practical educational tool for promoting sustainable eating habits, livelihood opportunities, and food entrepreneurship in schools and households. Ultimately, the study contributes to SDG 1: No Poverty through its potential for livelihood generation and income opportunities, and SDG 2: Zero Hunger through the promotion of nutritious, affordable, and sustainable food alternatives, while also supporting broader goals related to health, food security, and environmental sustainability.

Keywords: *Rabbit meat, Lapin-based recipes, sustainable cuisine, recipe book validation, sensory evaluation, ROI, Filipino dishes, ADDIE Model, SDG1 and 2*

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INTRODUCTION

The world faces challenges such as food insecurity, environmental damage, and health problems caused by poor diets. Rabbit meat, or lapin, is a nutritious and sustainable alternative because it is high in protein and low in fat and cholesterol (Dalle Zotte & Szendrő, 2011). Rabbit farming also requires less land, feed, and water and produces fewer greenhouse gases than common meats such as beef and pork (Paci, 2011). In the Philippines, rabbits can provide small farmers with a practical source of meat and income because they reproduce quickly and can be raised in small spaces. A doe can produce around 60 to 130 kits per year under good conditions (Kruger, 2022; Agriculture Monthly, 2018), providing an alternative during pork and poultry shortages (Cudis, 2021).

Despite these benefits, rabbit meat remains less accepted in the Philippines. Many Filipinos consider rabbits primarily as pets rather than food (Sarmiento, 2021), while limited supply and higher prices also affect consumption (Rivas, 2021). Lack of knowledge about preparation, cultural beliefs, and limited recipes further contribute to its low acceptance (Kallas & Gil, 2012). These challenges show the need to introduce rabbit meat through appropriate recipes and educational activities that can increase awareness of its nutritional and sustainable benefits.

This project aims to develop and validate a **rabbit meat recipe book** featuring traditional Filipino dishes adapted using rabbit meat. The recipes will be tested and reviewed by food experts and teachers to ensure their quality and acceptability. The recipe book will also be used in Home Economics and Cookery classes to help learners develop practical cooking skills and understand healthy and sustainable food choices. By promoting rabbit meat as an alternative source of nutritious protein, the project may contribute to **SDG 1: No Poverty** through livelihood opportunities and **SDG 2: Zero Hunger** by promoting accessible, nutritious, and sustainable food sources.

Objectives of the Study

The study aims to evaluate the validity and acceptability of the developed Lapin-based recipes to produce a comprehensive guide for sustainable cuisine. Specifically, the study sought to address the following objectives:

1. Evaluate the sensory quality of the determined lapin-based dishes;
2. Develop a recipe book based on the determined lapin-based dishes;
3. Determine the return on investment (ROI) per 300 grams of lapin used in each recipe;
4. Validate the recipe book through expert evaluation; and
5. Determine the degree of acceptability of the recipe book.

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METHODOLOGY

This study employed a Research and Development (R&D) design, utilizing the ADDIE Model—a widely accepted framework in instructional and product development. The model includes five phases: Analysis, Design, Development, Implementation, and Evaluation. Through this systematic process, the study aims to create, validate, and refine a Lapin-Based Recipe Book that would serve both as an instructional material for educational settings and as a culinary reference for promoting sustainable food practices.

Procedure

A. Analysis (Preparation of lapin – based dish)

The researcher identified ten (10) popular Filipino dishes that are traditionally prepared using pork, beef, chicken, or chevon, and recreated them using rabbit meat (lapin) as a healthier and more sustainable alternative. These rabbit-based versions were prepared and subjected to sensory evaluation by food experts using the 9-point Hedonic Scale. The dishes were assessed based on five key attributes: appearance, aroma, taste, texture, and overall acceptability. This process aimed to ensure that the developed recipes were not only nutritious and sustainable but also appealing and culturally acceptable to the Filipino palate.

B. Design (Development of the Recipe Book)

In this stage, the researcher developed a comprehensive recipe book featuring a collection of rabbit meat dishes. Each recipe includes a brief description of the dish, a complete list of ingredients with accurate weights and measurements, clear step-by-step cooking procedures, and suggested plating or food presentation to enhance visual appeal. To evaluate the cost-effectiveness of each dish, a return on investment (ROI) was calculated based on the use of 300 grams of lapin per recipe.

The recipe book also includes an informative introduction to rabbit farming, outlining its health benefits, economic advantages, and practicality for small-scale production. This section emphasizes why rabbit meat is considered a smart, healthy, and sustainable alternative to traditional meats, making the resource not only a culinary guide but also an educational tool that promotes sustainable food practices.

C. Development (Validation of the Recipe Book)

After the completion of the initial version of the recipe book, it was subjected to expert validation by three professionals: one (1) professional chef, one (1) head teacher, and one (1) master teacher. These experts evaluated the recipe book using a standardized checklist and rating scale. Based on their feedback, the content, format, and presentation of the recipe book were revised and improved.

Following this expert validation, the revised version was evaluated by thirty (30) Technology and Livelihood Education (TLE) teachers. Their comments and suggestions were

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carefully reviewed and used to make further enhancements, contributing to the refinement of the final version of the recipe book.

E. Implementation and Evaluation (Refinement and Finalization of the Recipe Book)

Based on the feedback gathered during the validation process, the recipe book underwent a thorough refinement and finalization phase. Necessary revisions were implemented to address the issues raised by the validators, which included improving the clarity of instructions, enhancing the layout and visual design, correcting typographical and content-related errors, and providing clear explanations for unfamiliar terms. After these adjustments were made, the final version of the recipe book was carefully proofread and formatted, in preparation for copyright registration and eventual distribution.

Locale of the Study

This study was conducted in Sto. Niño, South Cotabato, specifically in five (5) public secondary schools where Technology and Livelihood Education (TLE) major teachers are assigned.

Respondents of the Study

The respondents of this study were composed of individuals who provided valuable insights into the development, validation, and effectiveness of the Lapin-Based Recipe Book. The initial evaluation was conducted by three (3) experts from the Municipality of Sto. Niño. These included: one (1) professional chef who had been awarded Best Performance in the Kitchen for five consecutive years at Hola España branches in Davao, Cebu, and Mactan; one (1) head teacher from Guinsang-an National High School, a graduate of Bachelor of Home Technology and Livelihood Education and Doctor of Education major in Educational Management; and one (1) master teacher who currently serves as the department head of the TLE Department at Sto. Niño National High School.

In addition to the expert validators, the study also involved thirty (30) TLE teachers and master teachers from various public secondary schools in the municipality of Sto. Niño. These educators assessed the usability, clarity, and overall effectiveness of the developed recipe book, contributing significantly to its refinement and finalization.

Sampling Technique

The study utilized two distinct sampling methods to select its respondents. Purposive sampling was employed in the selection of the professional chef, master teacher, and head teacher. This method was deemed appropriate as it allowed for the deliberate inclusion of experts with relevant knowledge, expertise, and professional experience in their respective fields, ensuring informed and credible evaluation of the recipe book.

Meanwhile, convenience sampling was used to select the secondary TLE teachers from various public schools in the Municipality of Sto. Niño. This approach was considered suitable

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for accessing participants who were readily available and willing to participate, thereby facilitating efficient data collection.

Data Gathering Instrument

This study utilized a data-gathering instrument specifically designed to collect feedback on the developed rabbit meat recipe book. One of the key tools used was a 9-point Hedonic Sensory Evaluation Sheet, adapted from the study of Nashi K. Alqahtani et al. (2025). This instrument is widely recognized in food science and consumer research for its effectiveness in measuring the degree of liking or disliking across essential sensory attributes, including appearance, aroma, texture, taste, and overall acceptability.

The scale ranges from 1 (Dislike Extremely) to 9 (Like Extremely), enabling evaluators to provide detailed, structured, and quantifiable feedback on each dish featured in the recipe book. By employing this standardized instrument, the study ensured that the sensory quality and consumer appeal of the lapin-based dishes were assessed objectively.

The feedback obtained from the sensory evaluation was used to refine the recipes and enhance the overall quality of the recipe book, with the goal of meeting high standards in terms of taste, presentation, and usability—particularly in educational and household cooking contexts

Scope and Delimitation of the Study

This study focused on the development, validation, and culinary exploration of lapin-based recipes with the goal of promoting sustainable, nutritious, and consumer-acceptable food choices. Using the Research and Development design, specifically following ADDIE Model as the guiding framework, the study followed five phases: Analysis, Design, Development, Implementation, and Evaluation.

As one of its primary outputs, the study produced a comprehensive lapin-based recipe guide intended to serve as a reference for teachers, students, parents, entrepreneurs, and researchers advocating for sustainable cuisine. The recipe book was crafted based on the results of the recipe assessments and underwent validation.
The recipe book, crafted based on the results of the assessment of the recipes, was evaluated by thirty (30) TLE secondary teachers from the Municipality of Sto. Niño. The evaluation utilized the evaluation rating sheet for printed resources by the Learning Resources Management and Development System (LRMDS) of the Department of Education.

Statistical Treatment

The following statistical measures or treatment were used to ensure the reliability and validity of the research instruments in the study. Both quantitative validation and evaluative techniques were employed.

For the sensory evaluation of the different Lapin-based recipes, three (3) experts conducted an assessment using an adapted sensory evaluation sheet. This tool was designed to

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evaluate specific sensory characteristics of the recipes, including appearance, aroma, texture, flavor, and overall acceptability.

Each parameter was rated using a Hedonic 9-point scale (9 = Like Extremely, 8 = Like Very Much, 7 = Like Moderately, 6 = Like Slightly, 5 = Neither Like nor Dislike, 4 = Dislike Slightly, 3 = Dislike Moderately, 2 = Dislike Very Much, 1 = Dislike Extremely). The scores given by the evaluators for each sensory attribute were averaged to determine the mean rating per parameter. The resulting mean scores were interpreted using a predetermined range: 8.50–9.00 → Like Extremely / Highly Acceptable, 7.00–8.49 → Like Very Much / Acceptable, 5.50–6.99 → Like Moderately / Moderately Acceptable, 4.00–5.49 → Like Slightly / Less Acceptable, and 1.00–3.99 → Dislike Extremely to Dislike Moderately / Not Acceptable. This process helped ensure that the recipes included in the final Lapin-based recipe book meet quality standards in terms of sensory appeal and consumer satisfaction.

The overall usability and instructional quality of the recipe book were assessed by Technology and Livelihood Education (TLE) teachers using a separate survey questionnaire. This questionnaire was adapted from the Guidelines and Process for LRMDS Assessment and Evaluation (2009) and evaluated the following criteria: Content (Relevance and usefulness of information), Format (Visual appeal and readability), Presentation and Organization (Logical structure and clarity) and Accuracy and Up-to-date Information

To measure the acceptability of the recipe book and its alignment with TLE competencies, a five-point Likert scale was used: 5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly Disagree. The collected data were analyzed using mean and standard deviation to understand the general trends and the level of agreement among evaluators. Mean scores were interpreted using the following scale: 4.20–5.00 → Highly Acceptable, 3.40–4.19 → Acceptable, 2.60–3.39 → Moderately Acceptable, 1.80–2.59 → Less Acceptable and 1.00–1.79 → Not Acceptable. To measure consistency in responses, the standard deviation was considered: < 0.50 → Very High Consistency (Evaluators mostly agreed), 0.50–1.00 → Moderate Consistency (Some variation in responses) and > 1.00 → High Variability (Significant differences in ratings) A high mean score combined with a low standard deviation indicated strong acceptability and consensus among evaluators regarding the quality of the recipe book.

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RESULTS AND DISCUSSIONS

SENSORY QUALITY OF THE DETERMINED LAPIN – BASED DISHES

Table 2. Sensory Acceptability of Lapin Adobo

Attributes	Mean	SD	Interpretation
Taste	8.00	1.00	Like very much
Aroma	8.00	1.00	Like very much
Color	9.00	0.00	Like extremely
Appearance	8.67	0.58	Like extremely
Texture	8.00	1.00	Like very much
Consistency	8.00	1.00	Like very much
General Acceptability	8.33	0.58	Like very much

Table 2 shows that the Lapin-based Adobo received a highly favorable sensory evaluation, with mean scores ranging from 8.00 to 9.00 on the 9-point hedonic scale. Color obtained the highest rating of 9.00 (SD = 0.00), interpreted as "Like extremely," while appearance scored 8.67 (SD = 0.58), also indicating strong preference. Taste, aroma, texture, and consistency each received a mean score of 8.00 ("Like very much"), while general acceptability scored 8.33 (SD = 0.58), resulting in an overall section mean of 8.29 (SD = 0.74). The low standard deviations indicate consistent responses among the panelists, suggesting that the Lapin-based Adobo was highly acceptable in terms of sensory qualities and overall preference. These findings support previous studies showing that rabbit meat can be successfully incorporated into traditional dishes because of its tenderness, mild flavor, and adaptability to local recipes (Cruz & Gomez, 2023; Llanes et al., 2022; Velasco & García-Ruiz, 2021).

Table 3. Sensory Acceptability of Lapin Afritada

Attributes	Mean	SD	Interpretation
Taste	8.33	0.58	Like very much
Aroma	8.00	1.00	Like very much
Color	9.00	0.00	Like extremely
Appearance	8.67	0.58	Like extremely
Texture	8.33	0.58	Like very much
Consistency	8.33	0.58	Like very much
General Acceptability	8.67	0.58	Like extremely

Table 3 shows that the Lapin-based Afritada received a highly favorable sensory evaluation, with an overall section mean of 8.48, interpreted as "Like very much." Color obtained the highest rating of 9.00 (SD = 0.00), while appearance and general acceptability both scored 8.67 (SD = 0.58), indicating strong preference for the dish's visual appeal and overall quality. Taste, texture, and consistency each received 8.33 (SD = 0.58), while aroma had the

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lowest score of 8.00 (SD = 1.00) but was still interpreted as "Like very much." The generally low standard deviations indicate consistent evaluations among the panelists, demonstrating that the Lapin-based Afritada was highly acceptable in terms of its sensory qualities and overall preference. These results support previous findings that rabbit meat can be successfully incorporated into traditional dishes because of its tender texture, mild flavor, and nutritional value (Velasco & García-Ruiz, 2021; Llanes et al., 2022).

Table 4. Sensory Acceptability of Lapin Dinakdakan

Attributes	Mean	SD	Interpretation
Taste	8.00	1.00	Like very much
Aroma	8.33	0.58	Like very much
Color	9.00	0.00	Like Extremely
Appearance	8.33	0.58	Like very much
Texture	8.00	1.00	Like very much
Consistency	8.33	1.15	Like very much
General Acceptability	8.33	0.58	Like very much

Table 4 shows that the Lapin-based Dinakdakan was highly acceptable, with an overall section mean of 8.33 (SD = 0.70), interpreted as "Like very much." Color received the highest rating of 9.00 (SD = 0.00), indicating unanimous appreciation of its visual appeal, while aroma, appearance, consistency, and general acceptability each scored 8.33, also interpreted as "Like very much." Taste and texture received 8.00 (SD = 1.00), showing positive acceptance despite slight variations in panelists' preferences. Overall, the high mean scores demonstrate that rabbit meat can be successfully incorporated into a culturally familiar Filipino dish such as Dinakdakan, supporting its culinary adaptability and potential as an alternative protein source (Velasco & García-Ruiz, 2021; Llanes et al., 2022; Cruz & Gomez, 2023).

Table 5. Sensory Acceptability Lapin Kaldereta

Attributes	Mean	SD	Interpretation
Taste	8.67	0.58	Like Extremely
Aroma	8.33	0.58	Like very much
Color	9.00	0.00	Like Extremely
Appearance	9.00	0.00	Like Extremely
Texture	8.33	0.58	Like very much
Consistency	8.67	0.58	Like Extremely
General Acceptability	8.67	0.58	Like Extremely

Table 5 shows that the Lapin-based Kaldereta received exceptionally high sensory acceptability, with an overall section mean of 8.67 (SD = 0.41), interpreted as "Like extremely." Color and appearance received the highest ratings of 9.00 (SD = 0.00), indicating unanimous approval of the dish's visual appeal. Taste, consistency, and general acceptability each scored 8.67 (SD = 0.58), while aroma and texture received 8.33 (SD = 0.58), still interpreted as "Like very much." The high mean scores and low standard deviations indicate strong and consistent

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panelist acceptance, suggesting that rabbit meat can effectively substitute traditional meats in Kaldereta without compromising sensory quality. These findings support previous studies highlighting rabbit meat's tenderness, flavor-absorbing ability, and suitability for traditional Filipino dishes (Cruz & Gomez, 2023; Llanes et al., 2022; Velasco & García-Ruiz, 2021).

Table 6. Sensory Acceptability of Lapin Kinilaw

Attributes	Mean	SD	Interpretation
Taste	7.67	0.58	Like very much
Aroma	7.33	0.58	Like very much
Color	8.67	0.58	Like Extremely
Appearance	8.33	0.58	Like very much
Texture	8.00	1.00	Like very much
Consistency	7.67	0.58	Like very much
General Acceptability	8.00	0.00	Like very much

Table 6 shows that the Lapin-based Kinilaw was highly acceptable, with an overall section mean of 7.95 (SD = 0.56), interpreted as "Like very much." Color received the highest rating of 8.67 (SD = 0.58), interpreted as "Like extremely," while appearance and texture scored 8.33 and 8.00, respectively, indicating strong satisfaction with the dish's visual appeal and mouthfeel. Taste, aroma, and consistency received scores ranging from 7.33 to 7.67, still within the "Like very much" range, while general acceptability scored 8.00 (SD = 0.00), showing unanimous positive evaluation. Overall, the results demonstrate that rabbit meat can be successfully adapted to Kinilaw without compromising sensory quality, supporting its potential as a culturally adaptable alternative protein source in Filipino cuisine (Medina et al., 2022; Cruz et al., 2021; Delos Reyes et al., 2020).

Table 7. Sensory Acceptability of Lapin Lechon

Attributes	Mean	SD	Interpretation
Taste	8.67	0.58	Like Extremely
Aroma	8.67	0.58	Like Extremely
Color	9.00	0.00	Like Extremely
Appearance	9.00	0.00	Like Extremely
Texture	8.67	0.58	Like Extremely
Consistency	8.67	0.58	Like Extremely
General Acceptability	8.67	0.58	Like Extremely

Table 7 shows that the Lapin-based Lechon received exceptionally high sensory acceptability, with an overall section mean of 8.76 (SD = 0.41), interpreted as "Like extremely." Color and appearance received perfect scores of 9.00 (SD = 0.00), indicating unanimous approval of the dish's visual appeal. Taste, aroma, texture, consistency, and general acceptability all scored 8.67 (SD = 0.58), also interpreted as "Like extremely," demonstrating consistent satisfaction across all sensory attributes. The low standard deviations indicate strong agreement among panelists, suggesting that the roasting process enhanced the flavor, aroma, browning, and

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texture of the rabbit meat. Overall, the results demonstrate the strong potential of rabbit meat as an acceptable alternative for traditional Filipino dishes such as Lechon (Santos & De Guzman, 2021; Reyes et al., 2023; Librando et al., 2022).

Table 8. Sensory Acceptability of Lapin Papaitan

Attributes	Mean	SD	Interpretation
Taste	7.67	0.58	Like very much
Aroma	8.00	0.00	Like very much
Color	8.67	0.58	Like very much
Appearance	8.00	0.00	Like very much
Texture	8.00	0.00	Like very much
Consistency	7.67	0.58	Like very much
General Acceptability	8.00	0.00	Like very much

Table 8 shows that the Lapin-based Papaitan was highly acceptable, with an overall section mean of 8.00 (SD = 0.25), interpreted as “Like very much.” Color received the highest score of 8.67 (SD = 0.58), while aroma, appearance, texture, and general acceptability each scored 8.00 (SD = 0.00), showing complete agreement among the panelists. Taste and consistency received 7.67 (SD = 0.58), which still indicated strong acceptance despite slight variation in preference for the dish’s characteristic bitterness. Overall, the results demonstrate that rabbit meat can be successfully incorporated into culturally significant dishes such as Papaitan while maintaining favorable sensory qualities and consumer acceptability (Gonzales et al., 2021; Reynoso & Del Rosario, 2020; Santiago & Cruz, 2022)

Table 9. Sensory Acceptability of Lapin Sinigang

Attributes	Mean	SD	Interpretation
Taste	8.00	1.00	Like very much
Aroma	8.00	0.00	Like very much
Color	8.00	1.00	Like very much
Appearance	8.00	0.00	Like very much
Texture	8.00	0.00	Like very much
Consistency	8.00	0.00	Like very much
General Acceptability	8.00	0.00	Like very much

Table 9 shows that the Lapin-based Sinigang received consistently high sensory ratings, with all seven attributes obtaining a mean score of 8.00, interpreted as “Like very much.” The section mean was also 8.00 (SD = 0.29), indicating strong overall acceptability. Aroma, appearance, texture, consistency, and general acceptability had SD = 0.00, showing unanimous agreement among panelists, while taste and color had SD = 1.00, indicating only slight variation in responses. Overall, the results demonstrate that rabbit meat can be successfully used in Sinigang while maintaining high palatability and consumer acceptance, supporting its potential

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as a nutritious and sustainable alternative to conventional meats (Meilgaard, Civille, & Carr, 2016; Dalle Zotte & Szendrő, 2011; Paci et al., 2021).

Table 10. Sensory Acceptability of Lapin Sisig

Attributes	Mean	SD	Interpretation
Taste	9.00	0.00	Like Extremely
Aroma	8.67	0.58	Like Extremely
Color	8.67	0.58	Like Extremely
Appearance	8.67	0.58	Like Extremely
Texture	7.67	0.58	Like very much
Consistency	8.67	0.58	Like Extremely
General Acceptability	8.67	0.58	Like Extremely

Table 10 shows that the Lapin-based Sisig was highly acceptable, with mean sensory scores ranging from 7.67 to 9.00 and an overall section mean of 8.57 (SD = 0.49), interpreted between "Like very much" and "Like extremely." Taste received the highest score of 9.00 (SD = 0.00), indicating unanimous satisfaction, while aroma, color, appearance, consistency, and general acceptability each scored 8.67 (SD = 0.58), reflecting strong and consistent panelist approval. Texture received the lowest score of 7.67, but remained within the "Like very much" category, suggesting only a slight difference in preference. Overall, the results demonstrate that rabbit meat can be successfully incorporated into Sisig while maintaining high sensory quality and consumer acceptance, supporting its potential as an alternative and nutritious meat option (Meilgaard, Civille, & Carr, 2016; Lato & Ochoa, 2020; Dalle Zotte & Szendrő, 2011; Paci et al., 2021).

Table 11. Sensory Acceptability of Lapin Sweet and Sour

Attributes	Mean	SD	Interpretation
Taste	9.00	0.00	Like Extremely
Aroma	9.00	0.00	Like Extremely
Color	9.00	0.00	Like Extremely
Appearance	9.00	0.00	Like Extremely
Texture	8.67	0.58	Like Extremely
Consistency	9.00	0.00	Like Extremely
General Acceptability	9.00	0.00	Like Extremely

Table 11 shows that the Lapin-based sweet and sour dish received exceptionally high sensory ratings, with taste, aroma, color, appearance, consistency, and general acceptability all obtaining a perfect mean score of 9.00 (SD = 0.00), interpreted as "Like extremely." This indicates unanimous and strong satisfaction among the panelists across most sensory attributes. Texture received a slightly lower score of 8.67 (SD = 0.58) but remained within the "Like extremely" category, indicating only minor variation in perception. Overall, the results demonstrate excellent sensory quality and strong potential consumer acceptance of the Lapin-

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based sweet and sour dish, highlighting the importance of balanced sensory characteristics in food acceptability (Stone & Sidel, 2004).

EVALUATION RESULT OF THE DEVELOPED RESIPE BOOK ON LAPIN-BASED DISHES

Table12. Respondents' Validation Level of the Developed Lapin-Based Dishes Recipe Book

	Indicators	Mean	SD	Interpretation
1.	Content	23.51	2.24	Passed
2.	Format	61.53	2.83	Passed
3.	Presentation and Organization	19.23	1.74	Passed
4.	Accuracy and Up-to-Datedness of Information	24.00	0.00	Passed
	Overall Mean	**32.07**	**1.70**	

Table 12 shows that the developed recipe book passed validation across all four indicators: Content, Format, Presentation and Organization, and Accuracy and Up-to-Datedness of Information. The Format received the highest mean score of 61.53 (SD = 2.83), followed by Accuracy and Up-to-Datedness with 24.00 (SD = 0.00), Content with 23.51 (SD = 2.24), and Presentation and Organization with 19.23 (SD = 1.74). The overall mean of 32.07 (SD = 1.70) confirms that the recipe book met the required validation standards and was considered suitable as a teaching and learning resource. The findings highlight the importance of clear formatting, relevant content, organized presentation, and accurate information in instructional materials (Reynolds, 2021; Gagne et al., 2017; Morrison et al., 2019; Smith & Ragan, 2005). Although the validators rated the book positively, they recommended adding photographs to the rabbit farming section and reorganizing each recipe into a two-page format, with the finished dish and description on the first page and complete ingredients and procedures on the second page, to further improve its visual appeal, clarity, and educational value.

Return on Investment (ROI) Analysis per 300 Grams of Lapin

Table 13. Return of Investment (ROI) per Indicated Grams of Lapin-based Dish

Treatment	Weight (in grams)	Servings	Price/Serve (in PhP)	Sales (in PhP)	Expenses (in PhP)	Net Income (in PhP)	ROI (in %)
Adobo	300	2	95.00	190.00	75.00	115.00	60.53
Afritada	300	3	95.00	285.00	75.00	210.00	73.68
Dinakdakan	300	3	95.00	285.00	75.00	210.00	73.68
Kaldereta	300	4	95.00	380.00	75.00	305.00	80.26
Kinilaw	300	3	95.00	285.00	75.00	210.00	73.68
Lechon	1100	1	1200.00	1,200.00	275.00	925.00	77.08
Papaitan	500	8	95.00	760.00	125.00	635.00	83.55
Sinigang	600	8	95.00	760.00	150.00	610.00	80.26

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Sisig	300	2	95.00	190.00	75.00	115.00	60.53
Sweet and Sour	300	6	95.00	570.00	75.00	495.00	86.84

The price per serving for each dish was calculated based on the current market price of meat dishes at the Sto. Niño public market.

Table 13 presents the Return on Investment (ROI) of various Lapin-based dishes, showing that all products generated positive net income and were profitable. The ROI ranged from 60.53% for Adobo and Sisig to the highest of 86.84% for Sweet and Sour, while Papaitan and Kaldereta also recorded ROIs above 80%, indicating strong profitability. Lechon had a moderate ROI of 77.08% despite its higher price per serving, mainly due to its higher expense cost of PhP 275.00. Overall, the dishes generated total sales of PhP 4,905.00, expenses of PhP 1,075.00, and a net income of PhP 3,830.00, demonstrating favorable profitability. These findings emphasize the importance of effective pricing, portion control, cost management, and efficient resource allocation in improving ROI in culinary operations (Kimes & Chase, 2018).

EXPERTS' VALIDATION LEVEL OF THE DEVELOPED RECIPE BOOK

Table14. Experts' Validation Level of the Recipe Book

	Indicators	Mean	SD	Interpretation
1.	Content	26.15	2.39	Passed
2.	Format	62.33	0.58	Passed
3.	Presentation and Organization	20.00	0.00	Passed
4.	Accuracy and Up-to-Datedness of Information	24.00	0.00	Passed
	Overall Mean	**33.12**	**0.74**	

Table 14 presents the experts' validation of the developed recipe book across Content, Format, Presentation and Organization, and Accuracy and Up-to-Datedness of Information, with all indicators interpreted as "Passed." Format obtained the highest mean score of 62.33 (SD = 0.58), followed by Content at 26.15 (SD = 2.39), while Presentation and Organization and Accuracy and Up-to-Datedness both received perfect scores of 20.00 (SD = 0.00) and 24.00 (SD = 0.00), respectively. The overall mean of 33.12 (SD = 0.74) confirms that the recipe book met quality standards and was considered relevant, well-organized, professionally formatted, and accurate. These findings are consistent with the importance of clear formatting, content validity, effective organization, and accurate information in instructional materials (Reynolds, 2021; Gagné et al., 2017; Morrison et al., 2019; Smith & Ragan, 2005). Overall, the expert validation confirms the recipe book's suitability and readiness for instructional and practical culinary use.

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Acceptability of the Lapin-Based Recipe Book among TLE Teachers

Table 15: Acceptability Ratings of the Lapin-Based Recipe Book as Evaluated by the Users

	Statements	Mean	SD	Interpretation
1.	Recipe book is organized in a binder, pocket and other bound notebook.	4.80	0.41	Highly Acceptable
2.	Recipe book encourages the use of lapin meat in a positive and engaging manner.	4.83	0.38	Highly Acceptable
3.	All recipes are printed neatly or word process in appropriate recipe format.	4.83	0.38	Highly Acceptable
4.	Recipes use language that is appropriate, inclusive and understandable to the target audience.	4.73	0.52	Highly Acceptable
5.	The product is cost – effective and can contribute to students learning.	4.63	0.56	Highly Acceptable
6.	Recipe book is relevant and acceptable to my teaching career.	4.80	0.41	Highly Acceptable
7.	I am satisfied with the quality of the recipe book	4.70	0.47	Highly Acceptable
8.	I will use this cookbook in teaching Cookery	4.73	0.45	Highly Acceptable
9.	I will refer this recipe book to another colleague	4.70	0.53	Highly Acceptable
	Overall Mean	**4.75**	**0.46**	

Table 15 presents the respondents' evaluation of the developed recipe book, with all nine statements interpreted as "Highly Acceptable." The highest mean scores were recorded for the positive promotion of lapin meat and the neat, appropriate recipe format, both with M = 4.83 (SD = 0.38), while organization received M = 4.80 (SD = 0.41) and the language used in the recipes received M = 4.73 (SD = 0.52). Respondents also rated the recipe book as cost-effective (M = 4.63, SD = 0.56), relevant to their teaching career (M = 4.80, SD = 0.41), and useful for teaching Cookery (M = 4.73, SD = 0.45). The overall mean of 4.75 (SD = 0.46) confirms that the recipe book was highly acceptable in terms of clarity, organization, relevance, usability, and practical application. These findings support the importance of clear presentation, effective organization, appropriate language, cost-efficiency, and alignment with classroom needs in developing instructional materials (Reynolds, 2021; Morrison et al., 2019; Gagné et al., 2017; Smith & Ragan, 2005; Posner & Rudnitsky, 2017).

Conclusions

Based on the findings of the study, the following conclusions were drawn:

Rabbit meat, when integrated into traditional Filipino cuisine, is highly acceptable to the sensory palate of local consumers. The developed Lapin-based dishes, ranging from Adobo to Lechon, were all rated favorably across multiple sensory dimensions, specifically taste, aroma,

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color, appearance, texture, consistency, and general acceptability. The high sensory scores confirm that Filipino consumers are receptive to rabbit meat as an alternative protein source, especially when it is presented in familiar and culturally rooted culinary formats.

One of the most significant observations in this study is the strong visual appeal of the dishes, as evidenced by consistently high ratings in color and appearance. This suggests that presentation plays a crucial role in consumer acceptance, particularly when introducing a relatively unfamiliar protein like rabbit. Dishes such as Lechon, Kaldereta, and Sweet and Sour not only met but exceeded expectations in these categories, indicating that rabbit meat lends itself well to richly colored and texturally dynamic preparations.

Moreover, the consistency of sensory ratings across panelists, reflected in the low standard deviations indicates strong reproducibility and reliability of the recipe formulations. This consistency implies that the recipes are not only acceptable but also dependable for replication in both household and commercial kitchens. Even dishes with more complex or acquired flavor profiles, such as Kinilaw and Papaitan, achieved positive responses, further reinforcing the culinary adaptability of rabbit meat.

The expert validation of the Lapin-based recipe book further supports its educational and practical value. Evaluators confirmed that the format, content, presentation, and instructional accuracy of the book met professional standards, thereby making it suitable for use in culinary schools, vocational education, and home cooking environments. The recipe book stands as a meaningful contribution to the promotion of sustainable cuisine in the Philippines.

The financial analysis of the sample dishes suggests that Lapin-based cooking can be a viable entrepreneurial endeavor. While profitability varied depending on cost inputs and dish complexity, the overall returns were promising. With proper cost management, rabbit meat can be an economically feasible component of food businesses that aim to offer healthier and more environmentally friendly alternatives to conventional meats.

Furthermore, this study validates the sensory, instructional, and entrepreneurial potential of Lapin-based Filipino cuisine. It offers a compelling case for the inclusion of rabbit meat in the local food system, supporting broader goals of dietary diversity, sustainability, and culinary innovation.

Recommendations

Based on the findings and conclusions drawn from the study on the development, validation, and culinary exploration of Lapin-based dishes as a guide for sustainable Filipino cuisine, the following recommendations are suggested to promote the adoption of rabbit meat, support local food innovation, and encourage sustainable culinary practices:

1. LGUs may initiate awareness campaigns to promote rabbit meat through community events such as cooking contests, nutrition days, and feeding programs. Partnerships with

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agricultural offices are also encouraged to support backyard rabbit farming via training, capital access, and livestock programs.

2. The Department of Agriculture may include rabbit farming in sustainable livestock initiatives, supporting infrastructure, training, and access to breeders. It should also disseminate materials on rabbit meat processing and its benefits.

3. Integration of Lapin-based recipe development in the TLE (Cookery) and TESDA culinary programs is recommended. Instructional materials should also be developed to highlight the nutritional, cultural, and environmental relevance of rabbit meat.

4. The validated recipe book should be adopted as supplementary material in culinary courses focused on Filipino and sustainable cuisine. Further research is encouraged to explore market behavior, nutrition, and product stability.

5. Entrepreneurs are encouraged to offer Lapin-based dishes commercially, particularly top-rated options like Lechon and Kaldereta. Collaboration with rabbit farmers can establish localized farm-to-table models that promote sustainability and economic growth.

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