

Short communication

Innovative Approaches in Pet Food Preference Methodology: Developing a Comprehensive Assessment Framework

Abstract

This review offers a comprehensive guide on the utilization of a structured performa for assessing pet food preferences and owner perceptions. Developed by the Department of Livestock Product Technology at the College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, the performa enables systematic data collection and robust analysis. This paper details the performa's components, its application in field studies, and the methodologies for interpreting the results, thereby enhancing the rigor and depth of pet food research. Through this guide, researchers can achieve more accurate insights into pet food preferences, leading to improved nutritional products and informed decision-making in the pet food industry.

Keywords: Pet food assessment;owner perceptions;data collection tool;nutritional insights;field study methodology

Introduction

The pet food industry is rapidly evolving, driven by increasing pet ownership and growing awareness of pet nutrition^{1,2}. Understanding pet food preferences and the perceptions of pet owners is crucial for developing products that meet the nutritional needs and palatability expectations of pets, while also satisfying the preferences of their owners. Accurate assessment of these preferences helps in formulating better pet nutrition products, which can improve the health and well-being of pets and enhance owner satisfaction. Despite the significant market growth, there remains a research gap in systematically understanding pet owner preferences and perceptions, particularly in diverse cultural and geographic contexts³. Much of the existing research relies on anecdotal evidence or limited surveys that do not capture the full spectrum of factors influencing pet food choices. This lack of comprehensive data limits the ability of manufacturers to create products that effectively address the needs and preferences of both pets and their owners⁴. A structured performa for pet food evaluation addresses this gap by providing a standardized method for collecting and analyzing data on various aspects of pet food¹⁴. The performa developed by the Department of Livestock Product Technology at the College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, offers a detailed framework for gathering information on pet owner demographics, pet profiles, food preferences, and perceptions of different pet food types^{12,13}. The importance of using a structured performa lies in its ability to ensure consistency and comparability across studies, which is essential for drawing reliable conclusions. By standardizing data collection, researchers can more accurately identify trends and preferences, leading to better-informed decisions in product development and marketing. Furthermore, the performa facilitates comprehensive data analysis, allowing for a deeper understanding of the factors that influence pet food choices⁵. This review outlines the methodology for using structured performa in pet food evaluation studies. It covers the performa's components, its application in field studies, and the

interpretation of the results. By providing a detailed guide on utilizing this tool, the review aims to enhance the accuracy and depth of pet food research, ultimately contributing to the development of superior pet nutrition products.

Components of the Performa

The performa for pet food evaluation is meticulously designed to collect comprehensive and detailed data across several key areas. Each section is tailored to capture specific information necessary for a holistic understanding of pet food preferences and perceptions among pet owners.

1. Personal Profile of the Pet Owner:

- a. **Demographic Information:** This section gathers essential details about the pet owner, including their name, occupation, and address. Such demographic data are crucial for correlating pet food preferences with factors such as socioeconomic status and lifestyle⁶.
- b. **Experience in Rearing Pets:** Information on the number of years the owner has been rearing pets provides context for their preferences and perceptions⁷. More experienced owners may have different insights compared to those who are relatively new to pet ownership.

2. Profile of the Pet:

- a. **Basic Details:** This includes the pet's name, breed, age, sex, and body weight. These factors are important as they influence dietary needs and preferences. For instance, younger pets may have different nutritional requirements compared to older ones⁸.
- b. **Identification Characteristics:** Any unique identifying characteristics of the pet are noted, which can help in longitudinal studies where tracking the same subjects over time is necessary⁹.

3. Food Preference:

- a. **Types of Food:** Owners rate their pet's preference for various types of food, including homemade table waste, processed cooked meals, dried pet food, eggs, and fresh meat, on a scale from 1 to 5. This rating system helps in quantifying preferences and identifying popular food types.

4. Pet Food Evaluation:

Indicators: This section involves a detailed assessment of different aspects of pet food, such as general appearance, color, odor, crispness, consistency, meat flavor intensity, and overall acceptability. Each attribute is rated on a scale of highly appreciable to poor. This detailed evaluation helps in understanding the specific qualities of pet food that are most appealing to both pets and their owners^{10,11}.

5. Palatability Test:

6.Sample Scoring: Different pet food samples are scored on the same parameters used in the general evaluation section. This provides a comparative analysis of various pet food brands or types, highlighting which samples perform best across multiple attributes¹⁵.

When conducting palatability tests for pet food samples exceeding two options, several validated methodologies are employed in research settings to accurately assess animal preferences. The primary methods are detailed as follows:

7.Multi-Bowl Preference Test:

The multi-bowl preference test is a widely recognized approach wherein multiple bowls, each containing a different pet food sample, are placed in a controlled testing environment. The pet is allowed free access to all samples simultaneously, and researchers measure the initial choice, total intake from each bowl, and time spent on each option. This method is repeated across several days to account for daily variations in preferences and potential novelty effects. The multi-bowl preference test is frequently utilized as a preliminary screening tool for pet food formulations in palatability studies (Aldrich & Koppel, 2015).

8.Monadic Sequential Testing:

In monadic sequential testing, each sample is offered individually to the pet in separate sessions over several days. Samples are presented in a randomized order to minimize order bias. This method allows researchers to observe responses to each sample independently, measuring factors such as consumption rates and behavioral responses. Although more time-intensive, monadic sequential testing provides a controlled comparison that can yield reliable data on pet food preferences in a non-competitive setting (Ahlstrøm& Redman, 2020).

9.Multiple Two-Pan Tests (Round-Robin Design):

For studies requiring pairwise comparisons within a larger sample group, a round-robin design of multiple two-pan tests is commonly implemented. In this approach, each pair of samples is presented across different rounds. For example, if three samples (A, B, and C) are being tested, the pet would be presented with sample pairs A vs. B, B vs. C, and A vs. C in separate rounds. This setup allows researchers to evaluate relative preferences across all sample combinations, providing a structured approach to preference ranking (Pet Food Institute, 2021).

10.Latin Square Design:

The Latin square design is another widely applied method in multi-sample palatability research, used to systematically expose each pet to each sample across different testing days in randomized

sequences. This design effectively controls for order effects and other confounding variables, facilitating reliable statistical comparisons among multiple samples. Latin square designs are particularly useful in studies requiring a balanced comparison across varied formulations (Corbin et al., 2014).

Among these approaches, the **Multi-Bowl Preference Test** and **Round-Robin Paired Comparison** (multiple two-pan tests) are among the most validated methods in pet food palatability studies, providing robust data on pet food preferences when sample size exceeds two. These methodologies are critical for ensuring accurate and reproducible results, particularly in studies intended to inform formulation development and consumer preference prediction in the pet food industry.

11.Owner's Opinion:

Detailed Rating: Owners rate the pet food's general appearance, color, odor, crispness, consistency, meat flavor intensity, and overall acceptability on a scale from 1 to 7. This section captures subjective opinions, providing insight into owner satisfaction and preferences^{16,17}.

Pet Response and Acceptability:

- a. **Behavioral Indicators:** This part assesses the pet's response to the food, including whether the food is very much liked, liked, or disliked.
- b. **Acceptability by Pet:** Measures how readily the pet accepts the food, ranging from readily acceptable to discarded.
- c. **Leftover Content:** Evaluates how much food is left after feeding, indicating the level of acceptance.
- d. **Pet Digestion:** Monitors digestion responses, noting normal digestion, slight disturbances, or indigestion. This helps in understanding the physiological impact of pet food on the animal²⁰.
- e. **Overall Acceptability:** An overarching rating of the pet food's acceptance by the pet.

12.Perception on Pet Food Processing and Commercial Pet Food:

- a. **Agreement with Statements:** This section evaluates the owner's agreement with various statements regarding pet food, including preferences for homemade feed, palatability of commercial feed, and the perceived health benefits of commercial pet food^{18,19}.
- b. **Impact on Pet Health:** Owners assess statements about the impact of pet food on pet growth, immunity, coat quality, and health issues such as diarrhea.

- c. **Consumer Needs and Market Trends:** This includes statements about the availability, pricing, and quality consistency of commercial pet foods, as well as the owner's awareness of different brands and their marketing claims²¹.

Each section of the performais carefully structured to provide a comprehensive overview of pet food preferences and perceptions, ensuring that the data collected is both detailed and relevant. This systematic approach allows for nuanced analysis, facilitating the development of pet nutrition products that are well-suited to the needs of both pets and their owners.

12. Application of the Performa

The performa is a vital tool for conducting structured interviews and surveys among pet owners, ensuring systematic and comprehensive data collection. The application process involves meticulous preparation, data collection, scoring, analysis, and interpretation. Each step is crucial for obtaining reliable and insightful data^{22,23}.

1. Preparation:

- a. **Familiarization:** Researchers must thoroughly familiarize themselves with the performa and its various components. Understanding each section's purpose and the type of data it aims to collect is essential for effective use²⁴.
- b. **Pre-study Training:** Interviewers and data collectors should undergo pre-study training to ensure consistency and accuracy in data collection. This training should cover the objectives of the study, detailed instructions on using the performa, and methods to handle potential issues during interviews.

2. Data Collection:

- a. **Interview Methods:** Data can be collected through various methods, including in-person interviews, phone calls, or online surveys. The choice of method depends on the target population's accessibility and convenience^{25,26}.
- b. **Questionnaire Administration:** During the interviews, pet owners are guided through each section of the performa, providing information on their demographics, pet profiles, and food preferences. Interviewers should ensure that questions are understood correctly, and responses are accurately recorded²⁷.

3. Ensuring Completeness: It is important to ensure that all sections of the performaaare completed to gather comprehensive data. Any missing information can affect the study's outcomes²⁸.

13. Scoring and Rating:

- a. **Consistent Scales:** The performa uses consistent scales (e.g., 1 to 5, 1 to 7) for rating various food types and attributes. This uniformity facilitates comparative analysis across different samples and attributes.
- b. **Owner Ratings:** Pet owners rate different aspects of the pet food based on their experiences. These ratings include general appearance, color, odor, crispness, consistency,

meat flavor intensity, and overall acceptability. Consistent scoring ensures that the data is reliable and comparable²⁹.

14. Analysis:

- a. **Data Compilation:** The collected data is compiled systematically to enable detailed analysis. Quantitative data is entered into statistical software for analysis, while qualitative data is categorized and summarized³⁰.
- b. **Trend Identification:** The data is analyzed to identify trends in pet food preferences, perceptions of quality, and the impact of different foods on pet health and behavior. Statistical methods, such as descriptive statistics and regression analysis, can be employed to draw meaningful insights.

15. Comparative Analysis: By comparing ratings across different food types and attributes, researchers can identify which pet foods are most preferred and why.

1. Interpretation:

- a. **Understanding Preferences:** The results are interpreted to gain a comprehensive understanding of pet owners' preferences and the factors influencing these preferences. This includes evaluating the acceptability of different pet foods and the perceived health impacts on pets³¹.
- b. **Guiding Product Development:** The insights gained from the analysis can guide the development of new pet food products that align with pet owners' preferences and address identified gaps⁴⁸. For example, if fresh meat scores highly in terms of preference and perceived health benefits, manufacturers might focus on developing products with higher fresh meat content³².
- c. **Marketing Strategies:** Understanding pet owners' perceptions and preferences also aids in crafting effective marketing strategies. Highlighting the attributes that are most appreciated by pet owners can enhance product appeal and market penetration³³.

The structured application of the performa for pet food evaluation ensures thorough and reliable data collection, facilitating a deep understanding of pet food preferences and perceptions⁴⁷. This systematic approach is instrumental in advancing pet food research, guiding product development, and informing marketing strategies³⁴. By following the detailed steps outlined, researchers can enhance the accuracy and depth of their studies, ultimately contributing to the creation of superior pet nutrition products that meet the needs of both pets and their owners.

16. Benefits of Using the Performa

The use of a structured performa for pet food evaluation offers numerous advantages, contributing significantly to the quality and depth of research in this field. The benefits of using such a performa are multi-faceted, providing value through standardization, comprehensive data collection, insightful analysis, and practical application.

1. Standardization:

- a. **Consistent Framework:** The performa provides a consistent and uniform framework for data collection. This standardization is crucial for ensuring that data collected across different studies is comparable. By using the same metrics and scales, researchers can accurately compare results from different populations and settings, facilitating meta-analyses and longitudinal studies³⁵.
- b. **Reduced Bias:** A structured performa helps minimize interviewer and respondent bias. Standardized questions and rating scales ensure that all respondents are given the same prompts and options, leading to more reliable and objective data⁴⁰.

2. Comprehensive Data:

- a. **Wide Range of Information:** The performa captures a broad spectrum of data, including demographic details of pet owners, specific information about pets, and detailed assessments of food preferences and perceptions. This comprehensive approach ensures that all relevant factors are considered, providing a holistic view of pet food preferences³⁶.
- b. **Detailed Attributes:** By collecting data on various attributes such as general appearance, color, odor, crispness, consistency, and meat flavor intensity, the performa allows for a nuanced understanding of what aspects of pet food are most important to pet owners and pets³⁷.

3. Insightful Analysis:

- a. **Identifying Key Factors:** The detailed data collected enables researchers to perform in-depth analysis of pet owner preferences and pet responses. This helps in identifying key factors that influence pet food choices, such as specific ingredients, preparation methods, or sensory attributes³⁸.
- b. **Quantitative and Qualitative Insights:** The performa supports both quantitative and qualitative analysis. Quantitative ratings can be statistically analyzed to identify significant trends and correlations, while qualitative comments provide context and deeper insights into owner and pet behaviors³⁹.

4. Practical Application:

- a. **Informing Product Development:** The insights gained from the performa are invaluable for veterinarians, researchers, and pet food manufacturers⁴¹. Understanding pet owners' preferences and pets' responses helps in designing pet food products that are more likely to be accepted and preferred by the market.
- b. **Enhancing Market Strategies:** The detailed knowledge of market trends and consumer preferences aids in crafting effective marketing strategies⁴². Manufacturers can highlight the attributes that are most valued by pet owners, such

as natural ingredients or specific health benefits, to better position their products in the market.

- c. **Veterinary Recommendations:** Veterinarians can use the data to provide more informed dietary recommendations to pet owners, ensuring that pets receive nutrition that meets their specific needs and preferences⁴³.

5. Support for Research and Policy:

- a. **Evidence-Based Decisions:** Researchers and policymakers can rely on structured data to make evidence-based decisions regarding pet nutrition and health policies^{44,45}. The perform's comprehensive and standardized approach ensures that the data is robust and credible.
- b. **Longitudinal Studies:** The performa is suitable for longitudinal studies, where the same pet owner and pet profiles can be tracked over time to observe changes in preferences and health outcomes, providing valuable long-term insights⁴⁶.
- c.

Conclusion: The structured performa for pet food evaluation offers significant benefits by providing a standardized, comprehensive, and detailed approach to data collection and analysis. Its application enhances the quality of research, supports the development of better pet nutrition products, and informs effective market and health strategies. By leveraging these benefits, researchers, veterinarians, and manufacturers can better meet the needs of pets and their owners, ultimately contributing to improved pet health and satisfaction.

Table 1: Preference of Food given to the pet

S/No.	Items	Score
1.	Homemade Table waste	1
2.	Processed cooked meal	2
3.	Dried pet food	3
4.	Egg	4

5.	Freshmeat	5
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UNDER PEER REVIEW

S.No.	Indicators	Perception		
A.	General appearance	Highly appreciable	Slightly appreciable	Poor
B.	Color	Highly appreciable	Slightly Desirable	Poor
C.	Odour	Highly appreciable	Slightly appreciable	Poor
D.	Crispness	Highly appreciable	Slightly Desirable	Poor
E.	Consistency	Highly appreciable	Slightly appreciable	Poor
F.	Meat flavour intensity	Highly appreciable	Slightly Desirable	Poor
G.	Overall acceptability	Highly appreciable	Slightly acceptable	Poor

Table 2: Scorecard for palatability test of pet food by pet owners

Sample	General appearance	Color	Odour	Crispness	Consistency	Meat flavour intensity	Overall acceptability
1							
2							
3							
4							

5							
Remark							

Table 3: Pet owner's opinion / scores card about the pet food

Petowner's opinion/scores card about the pet food						
General appearance						
7	6	5	4	3	2	1
Color						
7	6	5	4	3	2	1
Odour						
7	6	5	4	3	2	1
Crispness						
7	6	5	4	3	2	1
Consistency						
7	6	5	4	3	2	1
Meat flavour intensity						
7	6	5	4	3	2	1
Overall acceptability						
7	6	5	4	3	2	1

Here is a description of a general appearance rating scale for pet food, with 1 being the worst and 7 the best:

7 (Excellent)

The sample has an outstanding appearance, with a visually appealing color, texture, and shape. It looks fresh, uniform, and well-prepared, with no visible imperfections or undesirable characteristics.

6 (Very Good)

The sample has a highly attractive appearance, with good color, texture, and shape. It shows minor, almost unnoticeable imperfections but is generally well-prepared and visually appealing.

5 (Good)

The sample has a satisfactory appearance with a mostly appealing color and texture. There may be a few minor imperfections or inconsistencies, but it is still acceptable in quality and presentation.

4 (Fair)

The sample is somewhat visually acceptable but has noticeable imperfections or inconsistencies. The color or texture may be slightly off, giving it a less appealing look compared to higher ratings.

3 (Poor)

The sample has a clearly unappealing appearance, with evident imperfections in color, texture, or shape. It may look uneven, unappetizing, or poorly prepared, detracting from its visual appeal.

2 (Very Poor)

The sample is very unattractive in appearance, with multiple flaws in color, texture, or shape. It looks unappetizing and may show visible signs of deterioration or mishandling.

1 (Unacceptable)

The sample has an extremely poor appearance and is visually unappealing. It may appear spoiled, discolored, or have severe imperfections. This rating indicates the worst quality, making it unfit for presentation.

Table 4: Evaluation Indicators for Pet Food Palatability and Acceptability

S/No.	Indicators	Perception		
A.	Pet response	Very much liked	Liked	Disliked
B.	Acceptability by pet	Readily acceptable	Slight hesitation	Discarded
C.	Leftover content	Fully finished	Incomplete	Whole left
D.	Pet digestion	Normal digestion	Slight disturbance	Indigestion
F.	Overall acceptability	Very acceptable	Slightly acceptable	Poor

Table 5: Pet Food Palatability and Acceptability Assessment Across Samples

Sample	Pet response	Acceptability by pet	Pet food intensity	Leftover content	Pet digestion	Overall acceptability
1						
2						
3						
4						
5						

Remark	
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UNDER PEER REVIEW

Table 6: Consumer Perceptions and Preferences Regarding Pet Food Processing, Commercial Pet Food, Health Impacts, and Consumer Needs

S/No.	Indicators	S A	A	DA
A.	Processing of pet food			
1.	I like to feed homemade feed to our pet			
2.	The taste of commercial feed is highly palatable to my pet			
3.	I prefer to provide cooked meat to my pet			
4.	I always provide fresh food to my pet			
5.	I actively seek out various information about pet food			
B.	Commercial pet food			
1.	Commercial pet food provides balanced diet to my pet			
3.	Feeding commercial pet food to pet is a costlier affair			
4.	Veterinarians usually suggest for feeding commercial pet food			
5.	Additional health claims made by commercial pet food are correct			
C.	Impact of Commercial pet food on pet health			
1.	Pet food enhances the growth rate of my pet			
2.	Pet food tends to provide immunity to my pet			
3.	Because of feeding Pet food my pet often suffers from diarrhea			
4.	Pet food has a positive impact on pet fur coat			
5.	The information on commercial pet food labels is misleading about health			

D.	Consumer need			
1.	Commercial pet food should be readily available			
2.	Remunerative market price of commercial pet food will tend to increase its utilization			
3.	Consumers are well aware about the different brands of Commercial pet food			
4.	Consumer prefers to buy pet food that has consistent quality			
5.	I prefer to go for commercial pet food as they are easy to serve			

SA: Strongly Agreed

A: Agreed

DA: Disagreed Suggestion if any.....

.....

Signature of Pet owner

Disclaimer (Artificial intelligence)

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- 1.
- 2.
- 3.

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