

Client Reliance on Artificial Intelligence (AI) Applications
for
Post-Diagnostic Decision-Making in Veterinary Services
(Applied Study on Pet Owners in Riyadh-Rahmah Clinic)

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Abstract

Over the last few years, artificial intelligence (AI) has gradually entered the daily work of veterinary clinics, not only as a diagnostic aid but also as a tool that shapes how clients think and decide about their pets' treatment. While several studies have addressed AI from a purely technical or medical perspective, little attention has been given to what happens after the consultation—when clients return home and use AI applications to double-check or even reinterpret their veterinarian's opinion.

This research aims to examine both how much and to what extent clients depend on these AI-based applications once a diagnosis has been made by the veterinarian. It also explores the psychological and social motives that push clients toward this behavior and how such reliance influences trust, decision speed, and loyalty to the clinic. The study adopts a descriptive–correlational design and combines quantitative surveys with qualitative interviews among pet owners in Riyadh. By drawing on the Technology Acceptance Model (TAM), Trust in Automation Theory, and Consumer Decision Behavior, the project seeks to map the boundaries between professional advice and digital reassurance. The expected results should help veterinary clinics understand this emerging pattern of AI-mediated decision-making and develop better strategies for communication, client education, and ethical technology use.

Keywords: artificial intelligence (AI); veterinary services; client trust; decision-making; technology acceptance; automation reliance

Introduction:

Artificial intelligence has moved rapidly from an experimental concept to a practical instrument in many areas of professional service. In veterinary medicine, its arrival is beginning to change how both veterinarians and pet owners perceive medical certainty. Sophisticated algorithms that once required research-lab resources are now built into phone applications and web platforms that anyone can access. These systems can read X-rays, interpret blood results, list differential diagnoses, and even suggest treatment options. In daily life, this means that a pet owner no longer depends entirely on the veterinarian's interpretation; a second opinion is only a few clicks away.

In practice, many clients now take the diagnosis provided at the clinic, enter it into an AI-based app, and wait for confirmation or contradiction. The pattern of decision-making has therefore changed from a straightforward "the doctor said → I will do" process into a more circular one that includes a technological checkpoint in between. Some clients use it for reassurance; others rely on it heavily, sometimes delaying their decision until the application "agrees" with the veterinarian. This raises an important managerial question: to what extent do clients allow AI to influence their final decisions about their animals' treatment?

Existing discussions about AI in veterinary medicine tend to celebrate its technical accuracy, but very few consider its social or psychological side. When clients consult AI tools independently, the clinic's authority can be strengthened if the app's results support the veterinarian or weakened, if they do not. Such behavior has obvious consequences for client trust, treatment compliance, and the economic stability of clinics operating in competitive markets like Riyadh.

The city provides an interesting setting for this study. Digital literacy is high, and pet ownership is increasing quickly, creating a population of clients who are comfortable with technology yet still value personal interaction. For veterinary clinics, this dual expectation is complex: they must appear modern and data driven without losing the human warmth that builds confidence. Understanding how AI affects client reasoning and emotions is therefore not only a technological issue but a central managerial one.

This research explores both the degree (how often) and the intensity (how deeply) of client dependence on AI after veterinary diagnosis. It will look at motives such as fear of diagnostic error, curiosity, perceived objectivity of AI, cost sensitivity, and the influence of friends or online communities. It will also measure how alignment or contradiction between AI feedback and the veterinarian's advice affects trust, compliance, satisfaction, and eventual loyalty. By linking insights from the Technology Acceptance Model, Trust in

Automation Theory, and Consumer Decision Behavior, the study aims to produce a realistic and practical view of AI's role in post-diagnostic decision-making.

In the end, the project hopes to answer a simple but urgent question for modern veterinary management how can clinics coexist productively with external AI platforms that clients already trust? The findings should provide guidance for balancing professional expertise with digital transparency while maintaining the humane relationship that remains at the heart of veterinary practice.

Problem Statement:

The rapid expansion of artificial intelligence (AI) applications into everyday life has changed the way clients interact with professional expertise. In veterinary medicine, what was once a straightforward relationship between a veterinarian and a pet owner now includes a silent digital participant the AI system. Many clients today consult these systems after visiting the clinic, entering symptoms or diagnostic terms into mobile apps or web platforms to see whether the AI “agrees” with the veterinarian’s interpretation. This behavior introduces a new dynamic of post-diagnostic verification that can either strengthen or weaken the professional’s credibility.

At present, there is little empirical evidence about how deeply this digital consultation influences final decisions. Some clients use AI casually, as a reassurance tool, while others depend on it heavily before deciding on treatment or surgery. In some cases, contradictory AI feedback has led to treatment delays, second opinions, or even the rejection of medically sound advice. For veterinary clinics, this uncertainty directly affects case acceptance rates, revenue, and long-term client relationships.

The core problem this research seeks to address is therefore the extent and impact of client reliance on AI applications following a veterinary diagnosis. It aims to determine not only how often clients consult AI but also how much those consultations affect their cognitive, emotional, and behavioral choices. By identifying the degree to which AI replaces or supplements human trust, the study will contribute practical knowledge to the management of veterinary services in digitally active communities such as Riyadh.

Significance of the Study

1. **Managerial significance :** Veterinary clinics operate in a market increasingly shaped by digital behavior. Understanding client dependence on AI will help managers design communication strategies that preserve trust, improve compliance, and reduce lost cases caused by conflicting information.
2. **Academic significance :** The study bridges three theoretical fields rarely combined in veterinary management: Technology Acceptance, Trust in Automation, and Consumer Decision Behavior. It extends these frameworks into an applied service context, contributing new empirical evidence to business and technology research.
3. **Social significance :** By revealing how clients interpret and act upon AI advice, the study contributes to broader discussions on digital ethics, responsible technology use, and the balance between information empowerment and professional authority.
4. **Economic significance :** For clinics, client hesitation or delayed treatment means financial loss. Insights from this study could guide pricing, consultation flow, and follow-up strategies that minimize revenue leakage while enhancing service transparency.

Objectives of the Study:

The main objective is to explore and quantify the extent to which clients rely on AI-based applications after receiving a veterinary diagnosis.

Specific objectives include:

1. To measure the frequency and intensity of AI usage among pet owners after veterinary consultations.
2. To identify the motivations and psychological factors (such as fear of error, curiosity, perceived objectivity, cost sensitivity, or social influence) that drive clients to consult AI.
3. To assess the impact of AI feedback—especially when it confirms or contradicts the veterinarian—on clients' trust, satisfaction, and willingness to proceed with recommended treatments.
4. To examine whether demographic factors (age, education, digital literacy) influence the degree of AI dependence.
5. To propose managerial and communication strategies for veterinary clinics to adapt effectively to this emerging behavior.

Research Questions

- 1.How frequently do clients consult AI applications after receiving a veterinary diagnosis?
- 2.To what extent do clients allow AI advice to influence their final decision regarding treatment or procedures?
- 3.What are the main motivations behind using AI for post-diagnostic verification?
- 4.How does alignment or contradiction between AI feedback and veterinary advice affect client trust and compliance?
- 5.Do age, gender, education level, or digital literacy moderate the relationship between AI use and trust in the veterinarian?

Research Hypotheses

- H1: Clients increasingly rely on AI applications to verify veterinary diagnoses before making final treatment decisions.
- H2: When AI feedback aligns with the veterinarian's recommendation, client trust and compliance increase significantly.
- H3: Contradictory AI feedback decreases trust, prolongs decision time, and reduces acceptance of clinical procedures.
- H4: The level of AI reliance is positively correlated with clients' digital literacy and perceived usefulness of technology.
- H5: The influence of AI on decision-making differs by demographic characteristics, with younger clients showing higher dependence than older ones.

Participants in Previous Studies

A review of earlier empirical work shows that most studies exploring technology acceptance or trust in automation in health-related contexts relied on moderate sample sizes ranging from 100 to 300 respondents, typically drawn from user populations with basic familiarity with digital technology.

For example, Hoff and Bashir (2015) surveyed 210 participants to measure the relationship between perceived reliability and trust in automated decision systems. Longoni et al. (2019) collected responses from 188 patients to examine attitudes toward algorithmic versus human medical recommendations, reporting that approximately two-thirds of participants had previously interacted with at least one digital health tool. In veterinary research, Huang et al. (2022) studied 124 pet owners exposed to AI-assisted diagnostic explanations and found that younger, more digitally literate clients were the most responsive to AI confirmation.

Other behavioral studies applying the Technology Acceptance Model (TAM) in service industries have used similar scales. Venkatesh et al. (2003) validated their constructs using a diverse sample of 215 professionals in different organizational settings, while Sharma and Patel (2023) surveyed 150 clients in outpatient clinics to identify predictors of continued AI use. These precedents demonstrate that reliable behavioral inference can be achieved with samples in the 120–250 range, provided the population is well defined and instrument reliability exceeds 0.7 on Cronbach's alpha.

Building on these models, the present study adopts a target sample of 150 participants representing pet owners in Riyadh who have received veterinary diagnoses within the past year. The number ensures statistical validity for correlational analysis while remaining feasible within the project's timeframe. In addition, 10 to 15 qualitative interviews will complement the survey to capture deeper motivational insights consistent with earlier mixed-method designs in the reviewed literature.

Theoretical Framework

The theoretical base of this study rests on three complementary frameworks: the Technology Acceptance Model (TAM), Trust in Automation Theory, and Consumer Decision Behavior Theory. Together they provide a structure for interpreting why and to what extent clients depend on AI applications after veterinary consultations.

1 .Technology Acceptance Model (TAM)

Originally proposed by Davis (1989), TAM explains user adoption of new technologies through two main perceptions: usefulness and ease of use. In this research, perceived usefulness refers to how helpful pet owners believe AI tools are in clarifying their pets' conditions or confirming diagnoses, while ease of use relates to how simple and intuitive the tools appear. If both perceptions are high, the probability of using and trusting AI increases. TAM also introduces attitude toward use and behavioral intention, which in this context translate into the client's willingness to integrate AI feedback into their decision.

2 . Trust in Automation Theory

Muir (1994) and Hoff & Bashir (2015) argue that reliance on automated systems depends on trust more than technical accuracy. Trust develops in two stages: initial trust, often shaped by appearance and reputation, and learned trust, which evolves from direct interaction. For veterinary clients, initial trust may arise from the perceived scientific authority of AI or from previous positive online experiences, whereas learned trust builds when the AI's advice aligns with the veterinarian's recommendations. When alignment is frequent, confidence grows; when contradictions occur, trust in either the veterinarian or the technology may erode.

3 .Consumer Decision Behavior Theory

The classic model by Engel, Blackwell & Miniard (1995) identifies stages of consumer decision-making: problem recognition, information search, evaluation of alternatives, decision, and post-purchase evaluation. The present study adapts this model to the veterinary setting. Here, the information-search stage includes consulting AI applications, while the post-purchase stage corresponds to reflection on whether the decision (e.g., accepting a treatment) was correct. AI therefore functions as a digital information source that can modify both evaluation and satisfaction.

4 .Integrated Framework

Combining these perspectives yields a conceptual view in which:

- Perceived usefulness and ease of use drive AI trust;
- AI trust and demographic factors influence degree of reliance;
- AI reliance affects decision outcomes such as compliance, satisfaction, and loyalty. This integration guides the hypotheses and operational definitions used in the empirical phase.

Methodology

1 .Research Design

The study adopts a descriptive–correlational design combining quantitative and qualitative approaches. Quantitative data will capture measurable relationships between AI use and decision variables, while qualitative interviews will enrich interpretation by exploring motivations and perceptions in greater depth. This mixed approach ensures both statistical validity and contextual understanding.

2. Population and Sampling

The population consists of pet owners in Riyadh City who have visited Rahmah veterinary clinic within the previous 3 months. A stratified random sampling method will be used to ensure representation across age, gender, and education levels. The expected sample size is 150 respondents for the survey and 10–15 participants for follow-up interviews.

3. Data Collection Methods

a. Survey:

A structured questionnaire will be distributed online and in-clinic. It will contain four main sections: demographic data, AI usage behavior, perceptions of usefulness and trust, and decision outcomes. Likert-scale questions (1 = strongly disagree to 5 = strongly agree) will measure constructs such as perceived usefulness, ease of use, trust in AI, and extent of reliance.

b. Interviews:

Semi-structured interviews will be conducted with selected participants to capture personal reflections, reasons for consulting AI, and emotional reactions to AI feedback. Each interview will last about 10 minutes and be recorded with consent.

4. Instrument Development

Survey items will be adapted from validated instruments in previous studies (Davis, 1989; Hoff & Bashir, 2015; Venkatesh et al., 2003).

An example of the questionnaire:

A sample of the questionnaire to be used in data collection is presented below. It is designed to capture both quantitative and qualitative insights related to clients reliance on artificial intelligence (AI) applications after receiving a veterinary diagnosis. The instrument follows the structure of five major sections, aligned with the research objectives and theoretical framework of the study.

Section 1: Demographic Information

1. Gender: Male / Female
2. Age group: 18–25 / 26–35 /36–45 /46+
3. Education level: High school / Bachelor's / Postgraduate / Other
4. Frequency of veterinary visits: Once / 2–3 times /More than 3 times
5. Familiarity with AI: Low /Moderate / High
6. Have you ever used an AI tool for animal health? Yes / No

Section 2: Use of AI Applications After Veterinary Visits

Please rate your agreement (1 = Strongly Disagree, 5 = Strongly Agree):

Statement 1 2 3 4 5

I usually use AI tools to confirm my veterinarian's diagnosis.
I trust that AI systems provide accurate advice for pets.
I use AI to compare different treatment options.
I check AI feedback before deciding on costly procedures.
I consult AI to understand my pet's symptoms.

Section 3: Trust and Perceptions

Statement 1 2 3 4 5

I trust my veterinarian more than AI applications.
AI advice appears more objective than human opinion.
When AI and the veterinarian agree, I feel confident.
Conflicting AI and vet results make me uncertain.
AI tools improve pet healthcare decisions.

Section 4: Behavioral Intention and Decision Actions

Statement 1 2 3 4 5

I delay treatment decisions until verifying AI results.
I would consider AI advice before approving surgery.
I share AI feedback with my veterinarian.
I rely on AI tools for follow-up information.
I will continue using AI tools in future veterinary decisions.

Section 5: Open-Ended Questions

1. Why do you use or not use AI tools after visiting the clinic?
2. Describe a situation where AI feedback influenced your decision.
3. What could veterinary clinics do to build stronger trust when AI is available?
4. How do you compare AI's accuracy with professional veterinary advice?

Notes on Administration

The questionnaire will be distributed both online (via Google Forms) and in person at selected clinics in Riyadh. It will take approximately 10–12 minutes to complete. Responses will be coded for statistical analysis, while open-ended answers will be thematically analyzed. All responses will remain confidential and used solely for academic purposes.

5. Data Analysis Techniques

Quantitative & Qualitative data will be analyzed using programs which will be suggested by my supervisors.

6. Ethical Considerations

All participants will be informed of the study's purpose and assured of confidentiality. Consent will be obtained before any data collection. No identifiable information will be published, and respondents will be free to withdraw at any time. The study will adhere to the ethical guidelines of the hosting university and the Saudi Council for Research Ethics.

Limitations of Methodology

While the sample is designed to represent Riyadh's pet-owner population, results may not generalize to other regions with different cultural or digital profiles. Self-reported data may also contain bias, as some participants might under- or over-estimate their use of AI. Nonetheless, triangulation and careful interpretation will mitigate these limitations.

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