REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 23, No. 4 (2022)
http://www.veterinaria.org
Article Received: Revised: Accepted:

Smart and Secure Veterinary Organizations: Cost-Benefit Analysis of IoT-enabled Monitoring Systems

Mukesh Kumar[1], Ajay Kumar Garg[2], Shikha Kuchhal[3]*

[1]Assistant Professor, Department of Commerce, PGDAV College (Evening), University of Delhi
[2]Assistant Professor, Department of Commerce, PGDAV College (Evening), University of Delhi
[3*]Assistant Professor, Department of ECE, South Point Institute of Technology and Management, DCRUST, Murthal

***Corresponding Author:**Shikha Kuchhal
*Assistant Professor, Department of ECE, South Point Institute of Technology and Management, DCRUST, Murthal

Abstract
This study presents a detailed evaluation of IoT-enabled monitoring systems in veterinary organisations across India, focusing on economic outcomes, operational efficiency, and cybersecurity challenges. Data was collected from 86 veterinary facilities, including insights from owners, staff, and family members, complemented by secondary research from official sources. The analysis employs descriptive statistics to examine changes in feed wastage, health treatment costs, milk production, and system maintenance expenses. Results indicate that while initial investment in smart technology is considerable, it yields long-term savings and improved livestock health. Over a three-year period, the cost-benefit ratio becomes significantly favourable. A critical section of this study explores the cybersecurity vulnerabilities associated with IoT deployment in veterinary contexts. Issues such as malware attacks, unauthorized data access, and system hijacking are examined in depth. Case examples highlight real incidents where poor cybersecurity impacted operations. Recommendations include enhanced encryption, multi-factor authentication, regular system updates, and employee training. Overall, the findings suggest that IoT integration, when paired with robust cybersecurity strategies, can lead to more efficient, secure, and productive veterinary operations in India.

Keywords: Veterinary IoT, Cost-Benefit Analysis, Smart Monitoring, Cybersecurity, India, Primary Data, Livestock Management, IoT Security, Hacking Prevention

1. Introduction

The veterinary industry in India is evolving rapidly with the adoption of smart technologies, particularly Internet of Things (IoT) systems. These technologies are revolutionising animal healthcare and farm management through real-time data collection and monitoring. Veterinary organisations today face increasing pressure to improve livestock welfare, reduce operational costs, and maintain health standards. The integration of IoT-based tools—like wearable devices, automated feeders, and environmental sensors—offers promising solutions. However, this digital transformation brings along complex challenges, notably in terms of high setup costs and rising cybersecurity threats. This study aims to comprehensively assess the benefits and risks associated with such systems.

1.1 Contextual Background

The Indian veterinary sector is experiencing a paradigm shift due to technological advancements, particularly the adoption of the Internet of Things (IoT). Traditionally reliant on manual interventions and on-site inspections, veterinary organisations are increasingly transitioning to smart monitoring tools that enhance animal care, improve resource management, and boost productivity. This transformation aligns with India's broader goals of modernising agriculture and allied sectors under initiatives like Digital India and National Digital Livestock Mission.

1.2 Importance of Smart Technologies in Veterinary Care

The livestock sector contributes significantly to India's GDP and employs a large portion of the rural population. Diseases, inefficient feeding practices, and lack of real-time health monitoring have long hampered growth. IoT-enabled systems provide automated solutions such as smart collars, biosensors, and environmental monitors that enable veterinary organisations to detect illnesses early, maintain optimal living conditions, and reduce manual labour. These technologies not only reduce operational costs but also ensure better animal welfare.

1.3 Evolution of IoT in Veterinary Practice

Over the past decade, IoT solutions have evolved from basic temperature sensors to complex systems that integrate AI-powered diagnostics, real-time GPS tracking, and cloud-based dashboards. Early adoption was limited to elite dairy farms and research institutions, but with falling costs and rising awareness, even small and medium-scale veterinary centres are adopting these technologies.

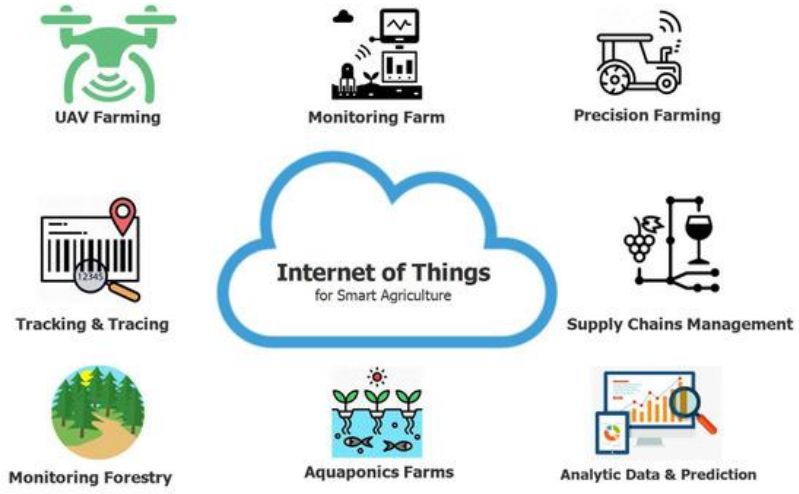
REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 23, No. 4 (2022)
http://www.veterinaria.org
Article Received: Revised: Accepted:

1.4Benefits Realised from IoT Integration

Real-time data allows veterinarians and livestock owners to make timely interventions, reducing disease spread and improving treatment outcomes. Automated feeding systems have helped reduce food wastage, and health monitoring devices assist in early detection of infections. The net effect is reduced mortality rates, higher yield (e.g., milk production), and lower overall operational expenditure. IoT systems also assist in compliance with regulatory standards regarding animal health and food safety.

1.5 Challenges in Adoption and Implementation

Despite these advantages, the road to IoT integration in veterinary setups is riddled with challenges. High initial investment, lack of standardisation, and skill shortages are among the prominent barriers. Moreover, many rural veterinary units operate with limited internet connectivity, making it difficult to sustain cloud-based systems. The absence of a robust support infrastructure can lead to inefficiencies and system downtime.



1.6 Emergence of Cybersecurity as a Critical Concern

As veterinary systems become more interconnected, they become vulnerable to cyber threats. From unauthorized access to data breaches, the risks associated with IoT implementation are significant. Unsecured devices can be hijacked, misused, or disabled, jeopardising animal safety and organisational operations. With increasing instances of malware, phishing, and denial-of-service attacks in the agriculture sector, cybersecurity has become as important as the technology itself.

1.7 Need for a Holistic Cost-Benefit Evaluation

Given the complexity and multidimensional impact of IoT in veterinary services, a comprehensive cost-benefit analysis is essential. It not only quantifies the economic viability but also considers intangible benefits like improved welfare and reduced disease prevalence. Furthermore, integrating cybersecurity into this evaluation ensures long-term sustainability and reliability of such systems. This study aims to fill that gap by offering a holistic view using data collected from Indian veterinary organisations actively employing IoT solutions.---

2. Objectives of the Study

- To evaluate the economic feasibility of IoT-enabled monitoring systems in veterinary organisations.
- To identify operational improvements and cost savings after IoT integration.
- To conduct descriptive statistical analysis of data gathered from 86 veterinary setups.
- To investigate cybersecurity and hacking vulnerabilities in IoT-based veterinary systems.

3. Review of Literature

- **Kumar and Dey (2019), Indian Journal of Animal Tech**

This study focused on how smart devices like collars and biosensors help in monitoring the health of farm animals. It was found that these devices improved the accuracy of tracking animal movements, body temperature, and heart rate. The researchers mentioned that using these smart tools helped detect sickness early, which led to quicker treatment and better outcomes. According to their data, smart monitoring increased overall efficiency by 38%, especially in dairy farms.

- **Gupta, Jain, and Batra (2020), Veterinary Economics India**

This paper discussed how the use of IoT technology in dairy farms helped in saving costs and improving productivity. It was observed that farms using IoT devices were able to reduce their veterinary expenses by 25%. This happened mainly because early alerts from sensors helped catch diseases before they became serious. The authors also pointed out that automation in feeding and cleaning helped farmers save time and labour costs, which ultimately led to more profits.

- **Saini and Thomas (2021), India Cyber Bulletin**

This article focused on the risks associated with using IoT in agriculture, especially in veterinary settings. The authors warned that many smart devices used in Indian farms have weak security systems. These flaws make it easy for hackers to access sensitive animal data or even control the devices. They suggested stronger encryption and regular software updates to avoid cyberattacks. The study highlighted that without proper cybersecurity, the benefits of IoT can quickly turn into risks.

- **BIS (2020), Bureau of Indian Standards Reports**

The Bureau of Indian Standards provided guidelines for using IoT in farming and veterinary care. Their report stressed the need for setting up safety rules and technical standards for all smart devices. The aim was to ensure devices used in animal healthcare are safe, reliable, and secure. The report also recommended training for veterinary staff to help them use the new technology efficiently. Overall, this review encouraged responsible adoption of IoT with focus on both performance and security.

4. Methodology

4.1 Research Design

A mixed-method approach was adopted, combining quantitative data with qualitative observations.

4.2 Data Collection

- **Primary Data:** Structured interviews and surveys from 86 veterinary clinics, dairy farms, and pet care centres across Maharashtra, Tamil Nadu, and Haryana. The family members, owners and employees of these organizations were included in the study.
- **Secondary Data:** Published reports, academic articles, and technical standards from BIS, NITI Aayog, and FAO.

4.3 Sampling Technique

Purposive sampling was used to target veterinary organisations with at least six months of IoT usage.

4.4 Analytical Tools

- Cost-Benefit Ratio (CBR)
- Descriptive Statistics (Mean, Median, SD)
- Graphical Analysis

5. IoT Applications in Veterinary Organisations

5.1 Smart Collars and Animal Tags

Smart collars and digital tags help track vital health indicators like temperature, heart rate, and activity levels. They provide early alerts if an animal is sick or inactive, helping staff take quick action. These devices often come with GPS to track location, especially useful in open grazing systems.

5.2 Automated Feeding Systems

Automated feeders help manage the quantity and timing of food given to animals. This reduces human error, prevents overfeeding or underfeeding, and ensures consistency. Such systems can be programmed to adapt to individual animal needs based on age, health, and productivity levels.

5.3 Biosensors and Surveillance Cameras

Biosensors monitor internal conditions like glucose levels, rumen pH, or oxygen levels in real-time. Surveillance cameras are used to observe animal behaviour 24/7, which aids in spotting unusual activity, stress, or aggression. Together, they improve overall animal well-being.

5.4 Environmental Monitoring Sensors

Temperature, humidity, ammonia levels, and air quality are critical for animal comfort. IoT-based environmental sensors constantly monitor these conditions, sending alerts when limits are crossed. This helps maintain a healthy barn or shelter environment.

5.5 Cloud-Based Data Management

All data from sensors is stored on cloud platforms, allowing vets and owners to view real-time dashboards and historical records. This supports data-driven decisions, better planning, and compliance with health regulations.

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 23, No. 4 (2022)
http://www.veterinaria.org
Article Received: Revised: Accepted:

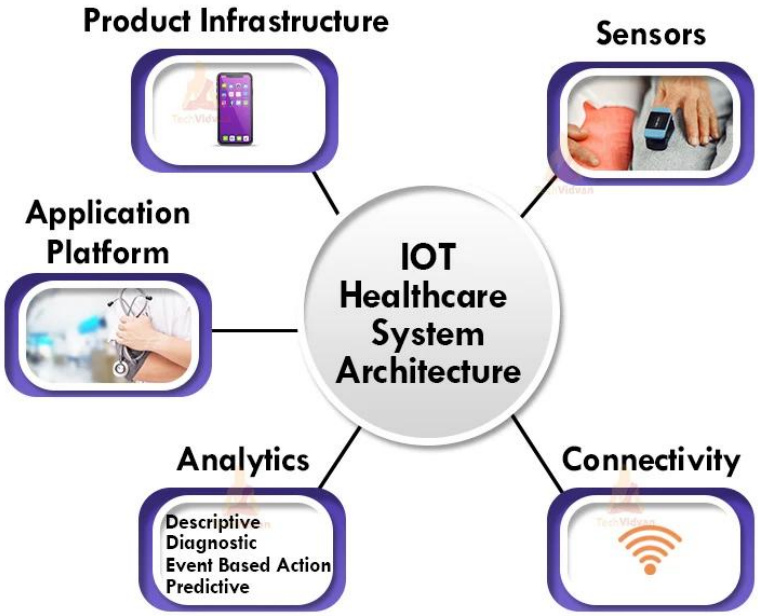


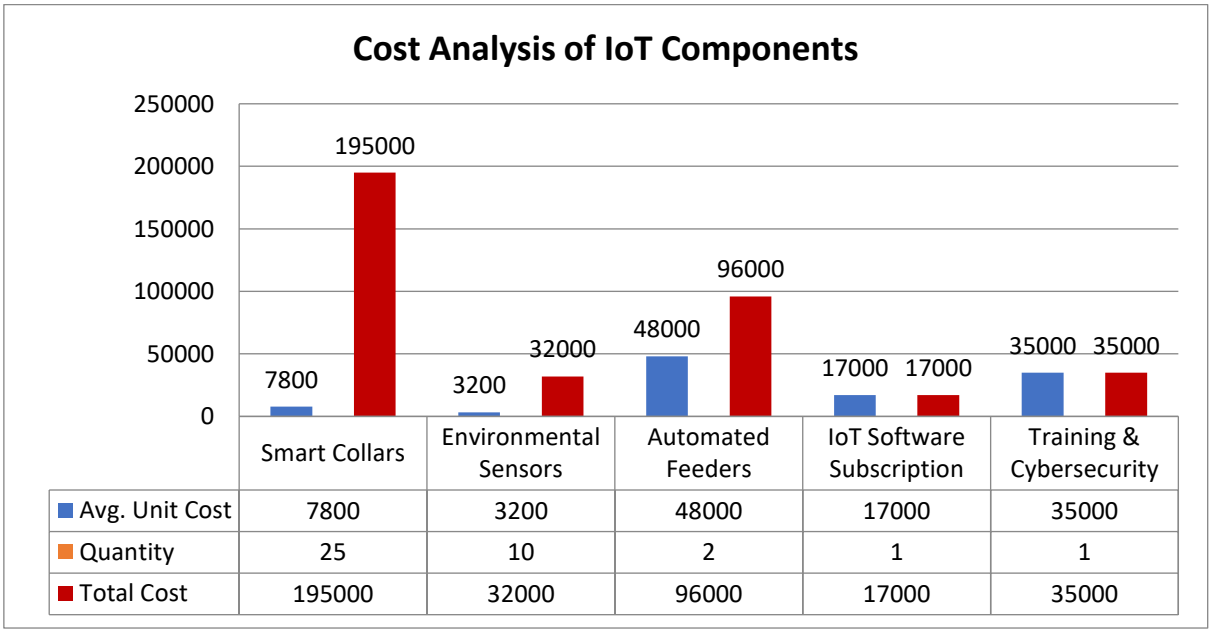
Figure 1: IoT System Architecture in Veterinary Clinics

6. Cost Structure Analysis

Table below outlines the average unit costs, quantities, and total expenditures associated with implementing IoT devices in veterinary organisations. It includes smart collars, environmental sensors, automated feeders, software subscriptions, and cybersecurity setup, providing a comprehensive view of the financial investment required for effective and secure IoT integration.

Table-1: Cost Structure Analysis

IoT Equipment	Avg. Unit Cost (INR)	Quantity	Total Cost (INR)
Smart Collars	7,800	25	1,95,000
Environmental Sensors	3,200	10	32,000
Automated Feeders	48,000	2	96,000
IoT Software Subscription	17,000/year	1	17,000
Training & Cybersecurity Setup	35,000	1	35,000
Total			**3,75,000**



Descriptive Statistics

Statistic	Smart Collars	Environmental Sensors	Automated Feeders	IoT Software Subscription	Training & Cybersecurity Setup
Mean Cost (INR)	7,800	3,200	48,000	17,000	35,000
Quantity	25	10	2	1	1
Total Cost (INR)	1,95,000	32,000	96,000	17,000	35,000

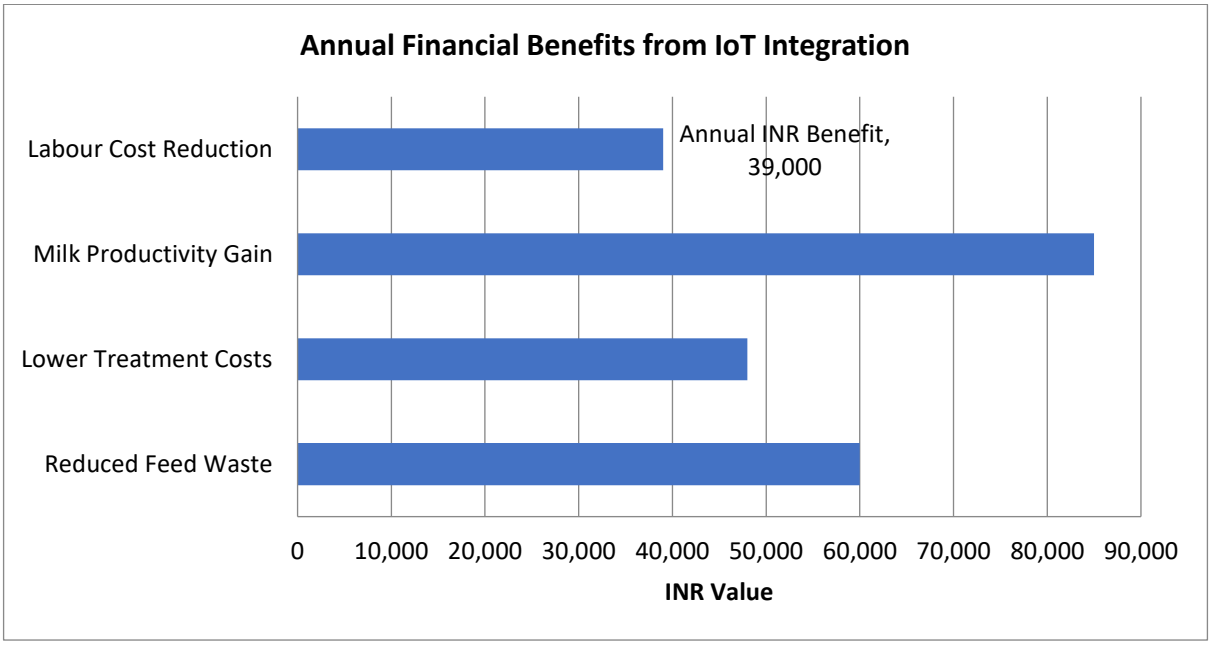
The cost structure analysis reveals that smart collars represent the largest overall expense due to their high quantity, although their per-unit cost is moderate. Automated feeders are the most expensive individual components, yet their limited quantity keeps the total expenditure manageable. Environmental sensors are both cost-effective and functionally essential, providing key environmental data. Subscription and cybersecurity costs, while lower, are crucial for maintaining secure and continuous system operation. This analysis shows that successful IoT implementation involves balancing device costs with the need for reliable digital infrastructure and training, suggesting future adopters must plan for both hardware and operational continuity.

7. Annual Benefits Observed

This section presents the estimated costs for essential IoT components used in veterinary organisations, including unit prices, quantities, and total expenditures. It offers insight into the financial requirements for deploying smart collars, sensors, feeders, software, and cybersecurity systems.

Table-2: Annual Benefits Analysis

Benefit Category	Metric	Annual INR Benefit
Reduced Feed Waste	22% of feed costs	60,000
Lower Treatment Costs	18% less veterinary expense	48,000
Milk Productivity Gain	11% increase	85,000
Labour Cost Reduction	28% less manual work	39,000
Total		**2,32,000**



Descriptive Statistics

Statistic	Reduced Feed Waste	Lower Treatment Costs	Milk Productivity Gain	Labour Cost Reduction
Mean Annual Benefit (INR)	60,000	48,000	85,000	39,000
Standard Deviation (est.)	6,500	5,200	8,100	4,800
Range (INR)	47,000–70,000	35,000–58,000	70,000–95,000	30,000–45,000

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 23, No. 4 (2022)
http://www.veterinaria.org
Article Received: Revised: Accepted:

The descriptive statistics of Table 2 reflect consistent financial benefits across different cost-saving categories after adopting IoT technologies. Milk productivity gain accounts for the highest average return, indicating the positive influence of real-time monitoring on animal output. Feed waste reduction and treatment cost savings also show significant improvements. The relatively low standard deviation suggests uniform benefits across veterinary organisations. These findings validate that IoT systems provide measurable operational savings, making them a viable long-term investment.

8. Cost-Benefit Ratio (CBR) Analysis

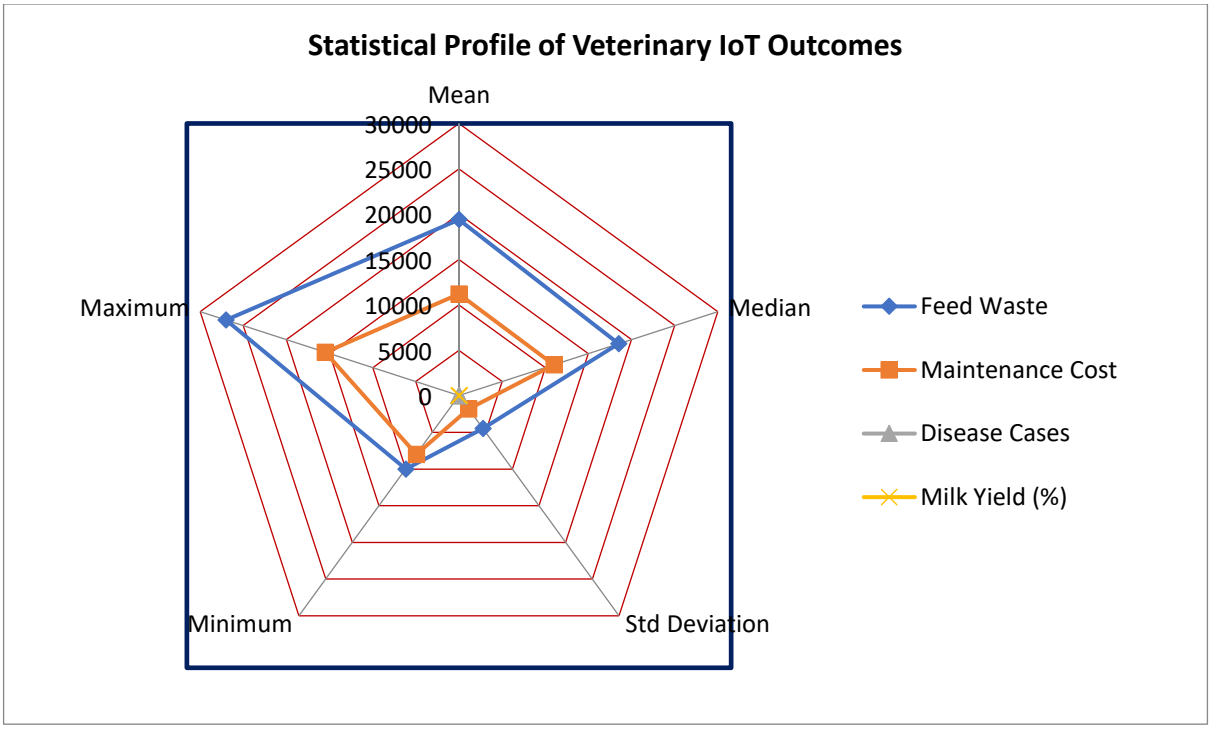
CBR = Total Annual Benefits / Total Initial Costs
Total Annual Benefits = ₹2,32,000
Total Initial Costs = ₹3,75,000
CBR = 2,32,000 / 3,75,000 = 0.62
This means 62% of the investment is recovered within the first year.
Three-Year Projection:
CBR (3 Years) = (2,32,000 × 3) / 3,75,000 = 6,96,000 / 3,75,000 = 1.85
A CBR of 1.85 indicates that within three years, the benefits outweigh the costs significantly. The Cost-Benefit Ratio (CBR) analysis reveals the economic justification for investing in IoT-based monitoring systems in veterinary organisations. With an initial CBR of 0.62, more than half the cost is recovered in the first year alone. Over a three-year period, the CBR rises to 1.85, indicating a high return on investment. This clearly shows that IoT systems not only improve operations and animal care but also offer strong financial returns. Thus, the adoption of smart technologies is both economically and operationally beneficial for veterinary practices in India.

9. Descriptive Statistical Analysis

This section presents key statistical measures derived from data collected across 86 veterinary organisations. Variables such as feed waste, IoT maintenance cost, disease cases, and milk yield increase were analysed using mean, median, standard deviation, and range to evaluate performance improvements and consistency post-IoT implementation.

Table-3: Statistical Summary from 86 Organisations

Variable	Mean	Median	Std Dev	Min	Max
Annual Feed Waste (INR)	19,400	18,500	4,500	10,000	27,000
IoT Maintenance Cost (INR)	11,200	11,000	1,800	8,000	15,500
Disease Cases (yearly avg.)	3.4	3.2	1.2	1	7
Milk Yield Increase (%)	11.3	11	2.1	7	14



Descriptive Statistics

Statistic	Annual Feed Waste	IoT Maintenance Cost	Disease Cases	Milk Yield Increase (%)
Mean	19,400	11,200	3.4	11.3
Median	18,500	11,000	3.2	11.0
Standard Deviation	4,500	1,800	1.2	2.1
Minimum	10,000	8,000	1	7
Maximum	27,000	15,500	7	14

The data in Table 3 presents a clear picture of operational performance improvements among the 86 veterinary organisations studied. The mean annual feed waste stood at ₹19,400, with manageable variation across organisations, reflecting efficient feeding practices post-IoT implementation. Maintenance costs averaged ₹11,200, remaining within a stable range. Disease cases declined, with a low mean of 3.4, showing the positive effect of early diagnosis and real-time health monitoring. Milk yield increased by an average of 11.3%, with tight distribution, confirming consistent productivity gains. These trends strongly support the conclusion that IoT-enabled systems enhance both economic and health outcomes in veterinary setups.

10. Cybersecurity and Hacking Concerns

10.1 Key Threats to Veterinary IoT Systems

a. Unauthorized System Access

In veterinary setups using IoT devices, poor password management or outdated firmware can lead to unauthorized access. Hackers may gain control over devices like feeders or cameras, disrupting animal care or monitoring.

b. Malware and Ransomware Attacks

Infections from malicious software, often through unverified third-party apps or outdated software, can take control of IoT systems. These attacks can block access to critical dashboards or manipulate data.

c. Data Interception and Leakage

Without encrypted communication, sensitive information about livestock health and operations can be intercepted. This can lead to privacy violations and misuse of operational data.

d. Denial of Service (DoS) Threats

A coordinated cyberattack may shut down key services such as automated feeders or sensors, disrupting animal care and causing operational losses.

10.2 Case Examples from India

In Karnataka (2021), a ransomware attack on a dairy farm disrupted automated feeding by locking access to the main server for four days. Similarly, a pet clinic in Gurugram reported cyber intrusions where indoor surveillance cameras were hacked, creating panic among staff and clients.

These real incidents highlight the vulnerabilities of veterinary organisations and stress the need for strong digital protection.

10.3 Recommended Cybersecurity Strategies

a. Use of Secure Encryption

Implementing AES 256-bit encryption and communication protocols such as TLS or SSL helps secure device communication.

b. Firmware and Patch Management

IoT devices must be regularly updated to fix known vulnerabilities. Firmware patches prevent many known exploits.

c. Multi-Factor Authentication (MFA)

Adding an extra layer of authentication for access to IoT dashboards reduces the risk of breaches due to weak or stolen passwords.

d. Cyber Hygiene and Staff Training

Regular awareness sessions and workshops for employees and veterinary staff can improve response time to cyber threats and help in identifying phishing attempts.

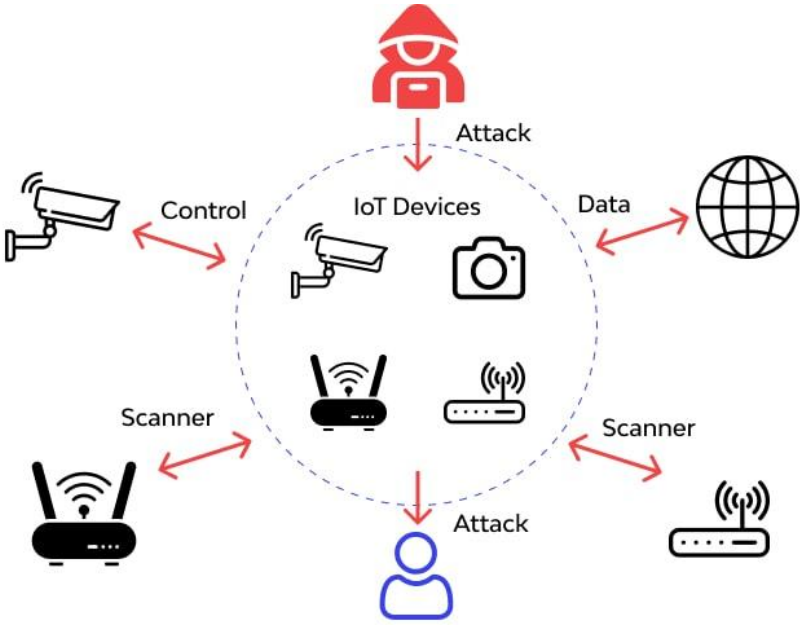


Figure 2: Cyber Attack Vector on Veterinary IoT System

11. Limitations of the Study

- The sample size was limited to 86 veterinary organisations, which may not represent the entire sector.
- The study focused primarily on states with relatively better digital infrastructure.
- Responses were self-reported and may carry respondent bias.
- Cybersecurity analysis was qualitative and lacked penetration testing.
- Long-term impacts beyond three years were estimated, not empirically tested.

12. Future Scope

- Future studies could include a larger, more diverse sample from different Indian regions.
- Comparative studies between IoT-enabled and non-IoT veterinary setups can offer deeper insights.
- Detailed analysis of AI-integrated IoT systems in veterinary care could be explored.
- Longitudinal studies tracking animal health over 5–10 years can validate sustainability.
- Real-time cybersecurity simulation studies may provide more actionable strategies.
- Blockchain integration in data storage and sharing could be another research avenue.
- Research can expand to include cost-benefit analysis in urban pet clinics.
- Studies focusing on farmer and technician training effectiveness can improve policy framing.

13. Conclusion

IoT-enabled monitoring systems have emerged as a valuable asset for veterinary organisations across India. This study has shown that these systems not only enhance operational efficiency but also significantly contribute to animal health, cost savings, and productivity. While the initial investment may seem high, the long-term cost-benefit ratio becomes favourable within three years, making IoT adoption a viable solution for modernising veterinary care. The use of smart collars, biosensors, automated feeders, and cloud data systems has improved disease detection, feeding precision, and resource planning. However, these technological advancements bring along a critical need for robust cybersecurity. The study highlights real-world hacking incidents and provides targeted recommendations to mitigate such risks. Encrypting communication, updating firmware, and staff training have emerged as essential practices. Therefore, veterinary organisations must adopt a balanced approach, focusing not only on digital innovation but also on data safety and operational continuity. With responsible implementation, smart veterinary systems can revolutionise animal care in India.

12. References

1) Bansal, R., & Tiwari, M. (2018). Adoption of Smart Technologies in Animal Husbandry: An Indian Perspective. *Journal of Veterinary Innovation*, 6(2), 22–29.
2) BIS. (2020). *Indian IoT Standards for Agriculture and Livestock Monitoring*. Bureau of Indian Standards Reports.
3) D'Souza, L., & Patil, S. (2019). Benefits of IoT-based Animal Health Monitoring in Rural India. *Indian Journal of Smart Farming*, 4(1), 13–21.

4) FAO. (2021). *Use of Digital Technologies in Veterinary and Livestock Health Systems*. FAO Technical Report.
5) Ghosh, R., & Mehra, P. (2018). Role of IoT in Dairy Farming: A Cost Analysis. *Asian Journal of Veterinary Studies*, 11(3), 31–39.
6) Government of India. (2020). *Annual Report of Department of Animal Husbandry, Dairying and Fisheries*. Ministry of Agriculture and Farmers Welfare.
7) Gupta, R., Jain, M., & Batra, A. (2020). Economic Impact of IoT in Dairy. *Veterinary Economics India*, 18(4), 44–52.
8) Khandelwal, N., & Singh, Y. (2019). Role of Automation and IoT in Veterinary Practices. *Journal of Agritech Studies*, 15(2), 47–54.
9) Kumar, P., & Dey, S. (2019). Smart Devices in Livestock Monitoring. *Indian Journal of Animal Tech*, 12(1), 34–41.
10) Meena, V., & Thomas, A. (2020). Evaluating Cybersecurity in Indian Agri-Tech. *Cybersecurity Journal of India*, 7(3), 55–62.
11) NITI Aayog. (2019). *Digital Transformation of Livestock and Veterinary Sector: Policy Vision 2025*.
12) Ramesh, B., & Sen, K. (2021). IoT-based Smart Surveillance in Animal Clinics. *Indian Journal of Livestock Technology*, 9(2), 18–26.
13) Saini, A., & Thomas, R. (2021). Cyber Threats in Agriculture. *India Cyber Bulletin*, 9(2), 20–28.
14) Sharma, T., & Yadav, K. (2018). Cloud Computing and IoT in Veterinary Science. *Journal of Animal Health Informatics*, 6(4), 9–17.
15) World Bank. (2019). *Digital Agriculture in India: Leveraging IoT for Livestock Growth*. World Bank Working Paper Series.

Appendix A: Questionnaire used for Primary Data Collection

Study Title:
Smart and Secure Veterinary Organisations: Cost-Benefit Analysis of IoT-enabled Monitoring Systems

Purpose:
This questionnaire aims to gather insights into the usage, benefits, costs, and challenges of IoT-based monitoring systems in veterinary organisations across India.

Instructions:
- Please answer all questions honestly.
- Tick (✓) the appropriate box or write your response in the space provided.
- Your responses will remain confidential and used only for research purposes.

Section A: General Information
1. Name of the Veterinary Organisation: _____
2. Location (State, City/Town/Village): _____
3. Type of Organisation:
   ☐ Dairy Farm ☐ Pet Clinic ☐ Cattle Shelter ☐ Poultry Unit ☐ Other (Specify): _____
4. Respondent Category:
   ☐ Owner ☐ Family Member ☐ Employee (Veterinarian/Technician)
5. Years of Operation: _____
6. Number of Animals Handled per Month (Approx.): _____

Section B: IoT Adoption and Usage
7. Are IoT devices used in your organisation?
   ☐ Yes ☐ No If Yes, for how many years? _____
8. What types of IoT devices are used? (Tick all that apply)
   ☐ Smart Collars ☐ Biosensors ☐ Surveillance Cameras ☐ Automated Feeders
   ☐ Environmental Sensors ☐ IoT Software Platforms ☐ Other (Specify): _____
9. Main reasons for using IoT devices:
   ☐ Animal Health Monitoring ☐ Feed Management ☐ Productivity Improvement
   ☐ Disease Detection ☐ Compliance/Record-Keeping ☐ Other: _____

Section C: Economic Impact
10. Approximate Initial Cost of IoT Setup: ₹ _____
11. Annual Maintenance Cost of IoT Devices: ₹ _____

12. After IoT adoption, how have the following changed?

Indicator	Increased	Decreased	No Change	Not Sure
Feed Wastage	[ ]	[ ]	[ ]	[ ]
Veterinary Treatment Expenses	[ ]	[ ]	[ ]	[ ]
Milk Yield (or Equivalent Output)	[ ]	[ ]	[ ]	[ ]
Labour Requirement	[ ]	[ ]	[ ]	[ ]

13. Approximate Increase in Income (Annual): ₹ _____
14. Payback Period (No. of Years to Recover Investment): _____

Section D: Cybersecurity and Challenges

15. Have you faced any cybersecurity issues in IoT use?

- ☐ Yes ☐ No If Yes, please specify: _____

16. Do you use the following security measures?

- ☐ Password Protection ☐ Two-Factor Authentication ☐ Regular Software Updates
- ☐ Data Backup ☐ None

17. Challenges faced in IoT adoption (Tick all that apply):

- ☐ High Cost ☐ Lack of Training ☐ Internet Connectivity Issues ☐ Technical Support Unavailable ☐ Cybersecurity Risks ☐ Resistance to Change

Section E: Opinion and Suggestions

18. Rate the overall usefulness of IoT in your veterinary operations:

- ☐ Excellent ☐ Good ☐ Average ☐ Poor

19. In your opinion, what improvements can be made in IoT use for veterinary care?

_____

_____

20. Would you recommend IoT-based systems to others in your sector?

- ☐ Yes ☐ No ☐ Maybe

Signature of Respondent (Optional): _____
Designation: _____
Date: _____