

AI ready individual data collection for fattening pigs using transponder ear tags

Practitioner expectations and implications for cross stage digital integration

J. Exler¹, V. Beck²

¹ Procurement of live pigs

² Sustainability Management

29-30 June 2026

Artificial Intelligence 4 Animal Science

Agenda

- 1 Motivation
- 2 Research Focus
- 3 Material & Methods
- 4 Results (Overview)
- 5 Results (Interpretation)
- 6 Key Finding
- 7 AI Perspective
- 8 AI Readiness Framework
- 9 Technical Insight
- 10 Conclusion
- 11 Take-Home Message
- 12 References

1. Motivation

Rising demands in pig production:

- Increasing need for *traceability and transparency* across the value chain
- Growing expectations regarding *animal welfare and product quality*

Current limitation:

- Predominantly *group level data systems*
- Limited insights into *individual animal performance and health*

Opportunity:

- Individual animal identification via *UHF RFID transponder ear tags*



2. Research Focus

Research question: *How do farmers perceive the introduction of individual animal data collection systems?*

Focus:

- Expected benefits
- Perceived barriers
- Requirements for practical implementation

Context:

- Transition towards *data driven livestock systems*

3. Material & Methods

Study design

- 11 semi structured expert interviews
- Farm managers (fattening pigs, HF3/HF4)



Analysis

- Qualitative content analysis (MaxQDA)
- Coding frequencies for comparison

Technical component: UHF RFID transponder ear tags

Descriptive evaluation of pilot data:

- Read events
- Transponder retention
- ID matching (farm ↔ slaughter)

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	11/11	farms rely primarily on group-level evaluation
■ ■ ■ ■ ■ ■ ■ ■ ■ ■	9/11	farms use some form of digital documentation
■ ■ ■ ■ ■ ■ ■ ■	8/11	respondents expect increased workload
■ ■ ■ ■ ■ ■ ■	6/11	respondents see potential for earlier detection of health or behavioural deviations
■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	10/11	respondents emphasise usability and workflow integration as key



5. Results (Interpretation)

Perceived benefits:

- Health monitoring & disease detection
- Improved herd management
- Increased traceability

Main concerns:

- Increased workload
- Unclear cost benefit ratio
- Technical complexity

Adoption depends on:

- **Usability**
- **Integration into workflows**
- **Economic value**

6. Key Finding

Mismatch between:

- *Technical feasibility*
vs.
- *Practical adoption*, i.e.
 - Technology is available
 - But not yet required for daily farm management

➡ Data collection = often perceived as **additional effort without immediate benefit**

7. AI Perspective

Implicit requirements from practice:

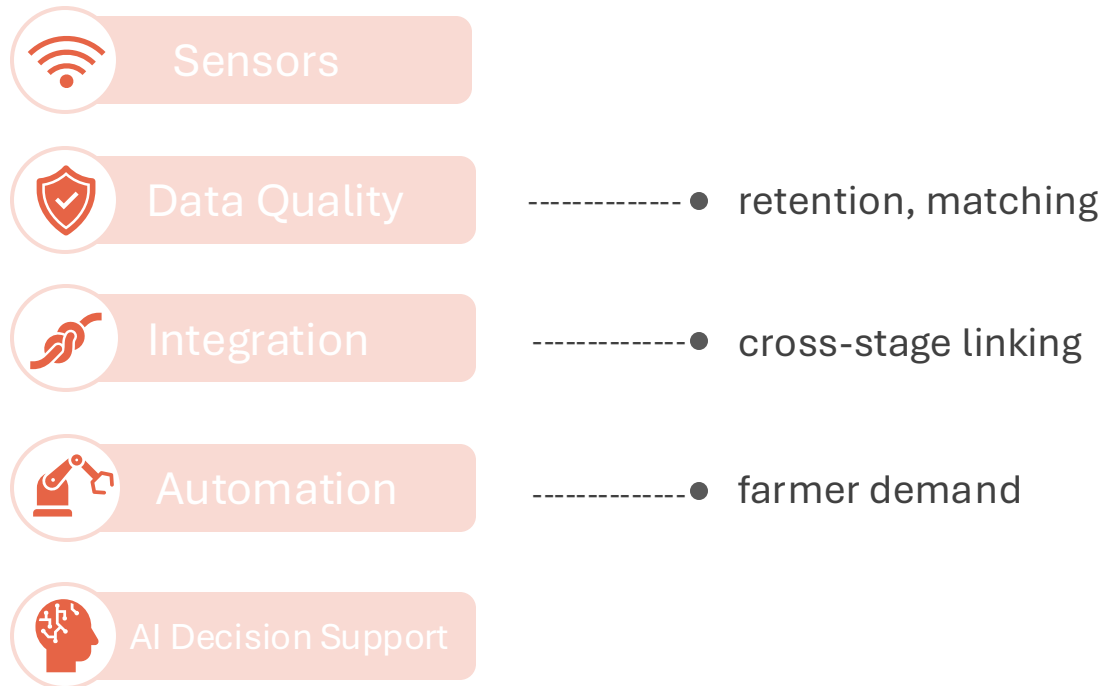
- Data continuity → stable transponder retention
- Cross stage integration → farm ⇌ slaughter linking
- Automated interpretation → decision support



Farmers expect **results, not raw data**

7. AI Readiness Framework

Data pipeline for AI applications:



Bottlenecks today:

- Data quality
- Integration
- Automation

9. Technical Insight

Pilot data indicate:

- Technical feasibility of data collection
- Challenges in:
 - Transponder retention
 - Reliable ID matching

➡ Data quality directly determines **future usability for analysis and AI**



7. Conclusion



KEY TAKEAWAYS



Farmers are **generally open** to innovation



Adoption depends on **clear practical benefits**



Individual animal data are **not yet standard**



FOR AI APPLICATION

Main challenge = not algorithms, but:



Data quality



Integration



Workflow compatibility

11. Take-Home Message

01

TECHNICALLY FEASIBLE

Individual animal data are technically feasible but not yet established.

02

ADOPTION DEPENDS ON VALUE

Successful implementation depends on usability and economic value.

03

DATA IS THE BOTTLENECK

AI potential is limited by data quality and integration, not by modelling.

12. Referces

- **Agropole Innovates (o.J.):** Ein deutsch-niederländisches Projekt zur Stärkung der Innovationskraft im Agrobuisness. <https://www.agrobusinessniederrhein.de/projekte/agropole-innovates> (retrieved 12 June 2026).
- **Exler, J. (2024):** Einzeltierdatenerfassung Mastschweine mittels Transponderohrmarken – Erwartungen von Praktikern mit Hilfe von qualitativen Interviews. Masterarbeit.
- **Kemnade et al. (2024):** Digitalisierung als Beitrag zur Verbesserung des Tierwohls – die Sicht von Tierhaltenden in der Landwirtschaft. 44. GIL – Jahrestagung, Biodiversität fördern durch digitale Landwirtschaft. Bonn: Gesellschaft für Informatik e.V.. S. 311-316. Stuttgart.
- **Kuckartz, U. (2018):** Qualitative Inhaltsanalyse. Methoden, Praxis, Computerunterstützung. Beltz Juventa Verlag. Weinheim, Basel.
- **Mayring, P. (2015):** Qualitative Inhaltsmethode. Grundlagen und Techniken. Beltz. Weinheim.



Thank you for your attention!

29-30 June 2026

Artificial Intelligence 4 Animal Science

Contact Information



Julia Exler



+49 (0)4442 9236 233



j.exler@brand-lohne.de



Dr. Verena Beck



+49 (0)4442 9236 411



v.beck@brand-lohne.de



brand[®]
QUALITÄTSFLEISCH