

Table S1. Categorization of Variables based on selected industry standards and peer reviewed literature.

| Question | Category | Reference | Reclassification | Notes | Reference |
|---------------------------|--------------------|-----------|--|---|--|
| State | State by state | No | | - | - |
| Serial number | - | No | | - | - |
| L .G. A | L. G. A by L. G. A | No | | - | - |
| Gender | 0 vs 1 | Y | M=1 F=0 | There 57% of women and 51% of men with a gender gap of 7.2% are involved in poultry. | The World Bank Nigeria development report (2021) (https://www.worldbank.org/en/country/nigeria/publication/nigeria-development-update-ndu). |
| Age of respondents | 0 vs 1 | Y | 41 and above = 1 1-40 = 0 | The mean age of poultry farmers is 40 years | Gender participation in commercial poultry production (http://www.lrrd.org/lrrd22/9/okoh22160) |
| Length in poultry farming | 0 vs 1 | Y | 6 and above =1 1-5 = 0 | 65% of farmers have mean farming experience of 6 years | Differentials in technical efficiency among broiler farmers in Imo state Nigeria (https://www.ajol.infor/index.php/naj/article/view/196166/185183) |
| Education level | 0 vs 1 | Y | Primary & secondary =0 Tertiary & others higher qualifications =1 | 40% of poultry farm owners hold secondary school cert, 35% a university degree and 8.3% a primary school certificate. | Socio-economic factors as determinants of farm management skills (www.resarchgate.net/publication/321650666) |

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| Farm location | | | | Skipped, not analyzed | |
| Name of farm | | | | Skipped, not analyzed | |
| Type of poultry | 0 vs 1 | Y | Broiler = 0 Layer & others = 1 | | Short cycle and long cycle |
| Number of chickens in the farm | 0 vs 1 | Y | 500 and above = 0 1-499 = 1 | | - |
| Source of feed | 0 vs 1 | Y | Self-compounded = 1 Commercial = 0 | Poultry farmers prefer to use self-compounded feeds than commercial feeds | Poultry farmers preference and use of commercial and self-formulated feeds (https://www.researchgate.net/publication/223151006) |
| Source of water for birds | 0 vs 1 | Y | Borehole/tap borne = 0 Stream/well/others = 1 | 27% of poultry farmers depend on borehole, tap water combined and 3% on depended solely well, stream or river. | quality of different water sources used in poultry and piggery farms in southeastern Nigeria (https://www.researchgate.net/publication/349180707) |
| Pen type | 0 vs 1 | Y | Standard block= 0 Others = 1 | In commercial and semi commercial setting in developing countries, chickens are normally housed in naturally ventilated pen with additional lightning provided in form of electricity | Poultry development review (https://www.fao.org/3/i3531e/i3531e.pdf) |

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| System of management | 0 vs 1 | Y | Deep litter = 1 Battery cage = 0 | There are three primary intensive control: deep litter, battery case and wire floor system. | Types of poultry management systems (https://fabioiclass.com/poultry-management-systems/) |
| Litter material | 0 vs 1 | Y | Saw dust/wood shavings/sand =0 Cement floor= 1 | | Beddings and no beddings |
| Litter management | 0 vs 1 | Y | Good=0 Poor/fair=1 | Daily grading of litter should be done.it is advisable to also use dry lime in order to keep litre dry. | Poultry litter management for better performance and production (https://www.pashudhanpraharee.com/poultry-litter-management-for-better-performance-and-production/) |
| Pen odour | 0 vs 1 | Y | Yes =1 No =0 | Ammonia is the cause of pen odor and the most environmentally significant aerial pollution associated with poultry production | Poultry development review (https://www.fao.org/3/i3531e/i3531e.pdf) |
| Stocking density | 0 vs 1 | Y | 1-16 =0 17 & above = 1 | | Code of practice 2012, broiler production South Africa http://www.sapoultry.co.za/pdf-docs/code-practice-broilers.pdf |
| Adherence to Vaccination | 0 vs 1 | Y | Yes=1 No/partial=0 | 87% of poultry farmers vaccinate their chickens | An appraisal of the use of vaccination for disease prevention in poultry in Ibadan, Nigeria. (www.ajol.info/index.php/bahpa/article/view/76526) |

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| Practice biosecurity | 0 vs 1 | Y | Yes = 1 No/partial = 0 | Practice of biosecurity in the study area was high | Adoption of biosecurity for disease prevention and control by poultry farmers in Imo state, Nigeria (www.ajol.info/index.php/jafs/article/view/204206) |
| Ever administered fowl typhoid/ cholera vaccine | 0 vs 1 | Y | Yes = 1 No = 0 | 4% of farmers vaccinate chickens against fowl typhoid and fowl cholera | An appraisal of the use of vaccination for disease prevention in poultry in Ibadan, Nigeria. (www.ajol.info/index.php/bahpa/article/view/76526) |
| Ever heard of Salmonella infection in poultry | 0 vs 1 | Y | Yes = 1 No = 0 | - | - |
| Ever experienced Salmonellosis | 0 vs 1 | Y | Yes=1 No=0 | Large scale farms had experienced more salmonella prevalence at 33% prevalence rate | Prevalence of salmonella in chicken , farm attendants and beddings (www.researchgat.net/figure/prevalence-of-salmonella-in-chickens-farm-attendants-and-bediing-in-hawassa-and-bonga-tbi2_317032593) |
| If salmonella ever encountered how was it managed/controlle d | 0 vs 1 | Y | Antibiotic/Vac cination = 1 Others = 0 | - | Survey |
| Knowledge of Salmonella as a zoonotic agent | 0 vs 1 | Y | No knowledge = 0 Knowledge = 1 | Majority of respondent have good knowledge about poultry diseases but not poultry zoonotic diseases | Understanding attitude, practices and knowledge of zoonotic infectious disease risks among poultry farmers in Ghana (https://onlinelibrary.wiley.com/doi/10.1002/vms3.257) |

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| Source of knowledge of Salmonella as major zoonotic agent | 0 vs 1 | Y | Media = 1 Others = 0 | Farmers with higher education level and longer experience have improved knowledge of zoonotic poultry diseases | Understanding attitude, practices and knowledge of zoonotic infectious disease risks among poultry farmers in Ghana (https://onlinelibrary.wiley.com/doi/10.1002/vms3.257) |
| Ever encounter mortality of chickens | 0 vs 1 | Y | No = 0 Yes = 1 | A mortality rate of 1.5% or less is normal however zero mortality is the aim. | Mortality in poultry (https://agreenerworld.org/wp-content/uploads/2018/05/TAFS-8-Mortality-in-poultry-v3.pdf) |
| Type of mortality | 0 vs 1 | Y | High & moderate = 1 Low/normal = 0 | | Survey |
| Ever taken sample to a veterinarian/ animal health lab. | 0 vs 1 | Y | No = 0 Yes = 1 | - | - |
| Type of Sample | - | No | | | Survey |
| What was the result? | 0 vs 1 | Y | Salmonella / Salmonella + others=1 No Salmonella = 0 | - | - |
| What did you do after the result? | 0 vs 1 | Y | Sell = 1 Others = 0 | - | Survey |
| What is the cost of treatment? | 0 vs 1 | Y | High = 1 Others = 1 | - | Survey |

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| Estimated cost of mortality from salmonella | 0 vs 1 | Y | High= 1 Others= 0 | - | Survey |
| Did Salmonella affect your production? | - | No | | - | Survey |
| Nature of effect on production | - | No | | - | Survey |
| Profit after sales | - | No | | - | Survey |
| Access to professional support | 0 vs 1 | Y | Yes= 1 Others= 0 | Shortage of professional affects availability of support. | Challenges and prospect of poultry industry (https://www.grin.com/document/296347) |

LGA = Local Government Authority; Y = Yes.

Supplementary Material File S1. Sample Questionnaire for risk factor data collection in the field

1. State -
2. Serial Number -
3. LGA -
4. Gender - A. Male, B. Female
5. Age of respondents – A. >60, B. 41-60, C. 21-40, D.<20
6. Length in Poultry Farming - <2years, B. 2-4years, C. 4-6years, D. >6years
7. Educational level – A. primary B. Secondary C. Tertiary D. others
8. Farm location -
9. Name of farm -
10. Type of poultry (commercial or backyard) – A. broilers B. Layers C. mixed D. others
11. Number of chickens in the farm – A. <200 B. 201-500 C. 501-1000 D. >1000
12. Source of feed- A. commercial feed B. concentrate mix C. self-compounded
13. Source of water for birds – A. borehole B. tap borne C. Well D. Stream E. others
(describe)
14. Pen type – A. standard block B. dwarf block C. zinc type D. others
15. System of management – A. deep litter B. battery cage C. others
16. Litter material – A. Sawdust B. wood shavings C. Sand D. cement floor E. others
17. Litter management – A. Good B. Poor C. Fair
18. Pen odor – A. Yes B. No
19. Stocking density – A. 12-14/M² B. 14-16/M² C. 16-18/M² D. 18-20/M² E. >20/M² F. not known
20. Adherence to vaccination - A. Yes B. No C. Partial
21. Practice biosecurity - A. Yes B. No C. Partial
22. Ever administered fowl typhoid/ cholera vaccine - A. Yes B. No
23. Ever heard of salmonella infections in poultry - A. Yes B. No
24. Ever experienced salmonella infection on farm - A. Yes B. No C. Don't Know

25. If salmonella ever encountered how was it managed/controlled – A. antibiotics B. Vaccination C. antibiotics and vaccination D. culling and sale E. others
26. Knowledge of salmonella as a zoonotic agent - A. Yes B. No
27. Source of knowledge of Salmonella as a zoonotic agent A. electronic media B. print media C. extension agent D. vet/animal health officer E. other farmers F. hospital
28. Ever encountered mortality of chickens - A. Yes B. No
29. Type of mortality A. high B. Moderate C. Low D. normal occurrence
30. Ever taken samples to a veterinarian/animal health lab - A. Yes B. No
31. What type of samples – A. feces B. Egg C. whole bird D. all E. others
32. What was the result – A. salmonella B. salmonella and another infection C. other
33. What did you do after the result? A. Treat B. Sell C. others
34. What is the cost of treatment – A. high B. Moderate C. Low D. others
35. Estimated cost of mortality from salmonella – A. high B. Moderate C. Low D. others
36. Did salmonella affect your production - A. Yes B. No
37. Nature of effect on production: A. high B. Moderate C. Low D. others
38. Profit after sales - A. Yes B. No
39. Access to professional support - A. Yes B. No C. Not always D. others