



Effective Altruism



**CONSUMER GAPS ON AWARENESS OF THE  
USE OF BATTERY CAGE POULTRY FARMING IN  
UGANDA AND ISSUES AROUND POULTRY  
PRODUCTION.**



## CONSUMER GAPS ON AWARENESS OF THE USE OF BATTERY CAGE POULTRY FARMING IN UGANDA AND ISSUES AROUND POULTRY PRODUCTION

**ABSTRACT:** In developed countries, consumers are often conscious of the poultry farming systems that are welfare friendly, which has greatly driven a production increase of welfare friendly eggs and chicken meat products. However, in Sub-Saharan Africa and specifically Uganda, a number of consumers have limited knowledge about production systems in the poultry industry. This study aimed at assessing the consumer gaps on awareness of the use of battery cage poultry farming in Uganda and issues around poultry production. A questionnaire-based study (n=120) was conducted in Kampala, Wakiso, Mityana and Kyotera districts in Uganda. Results showed that most of the consumers were non affluent females aged between 41 to 60. They usually bought poultry products from local or nearby shops and often spent between 20,000 Uganda shillings to 100,000 Uganda shillings on poultry products per month. Results also showed that consumers had knowledge about deep litter, free range and mostly battery cage system although free range products were the most preferred because of the good welfare conditions to the chicken in free range system. Consumers were also aware of the welfare requirements for poultry produced in different productions systems, especially battery cage system and hence they assured to pay a higher price for poultry products raised in better welfare and quality production systems. The study concluded that much as the consumers had knowledge about the use of poultry production systems, especially battery cage, more policy frameworks and regulations should strictly be implemented across the country so that all consumers can acquire more knowledge about the systems and their welfare requirements, which greatly influences their purchase and consumption behaviors.

**Keywords:** *Consumer awareness, gaps, poultry production, deep litter, free range and battery cage poultry farming systems.*

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## Table of Contents

|  |    |
|--|----|
| ACKNOWLEDGEMENT .....  | 2  |
| INTRODUCTION:.....   | 4  |
| MATERIALS AND METHODS:.....  | 4  |
| RESULTS: .....   | 5  |
| Table 1: Social demographic characteristics of respondents (N=120).....  | 5  |
| Table 2: Where poultry products are bought .....   | 6  |
| Table 3: Average expenditure of poultry products per month .....   | 6  |
| Table 4: Poultry production system known .....   | 7  |
| Table 5: Preference for products from any of the production systems .....  | 7  |
| Table 6: Awareness of welfare requirements for poultry produced in the production systems mentioned ..                                 | 8  |
| Table 7: Indicating the production systems on the products sold in the market .....  | 8  |
| Table 8: If the respondent would pay a higher price for poultry products raised in better welfare and quality production systems ..... | 8  |
| DISCUSSION:.....   | 10 |
| CONCLUSIONS:.....  | 11 |
| REFERENCES:.....   | 12 |

## INTRODUCTION:

The growing consumer demand for chicken products, especially eggs and poultry meat has primarily driven the poultry sector to expand and globalize for more than 20 years in countries of different income levels (El Jeni et al., 2021). There are different chicken production systems used worldwide including intensive, free-range and semi-intensive systems. To a great extent, chicken production at a commercial level largely depends on intensive systems that include deep litter and battery cage systems (Kraus, 2014). Consumers are increasingly aware of the conditions in growing chicken that are destined for consumption (De Carvalho et al., 2020). Their buying decisions for chicken products such as eggs and meat are impacted by several aspects, depending on the information available (Escobedo del Bosque et al., 2021). Price is certainly among the most important attributes when making buying decisions for eggs or meat and animal welfare attributes are also important (Minbashrazgah, Maleki & Torabi, 2017). There is increased willingness-to-pay for eggs and broiler chicken with higher levels of welfare concerns and to pay more attention to welfare labels when buying chicken products (Clark et al., 2017).

Since most consumers' knowledge about production systems in the poultry industry is limited (Erian and Phillips, 2017), the aim of this study was to assess the consumer gaps on awareness of the use of battery cage poultry farming in Uganda and issues around poultry production. The study results contribute to the body of knowledge to both consumers, farmers and academia about the preferences of products of different poultry production systems. It indicates whether, and to what extent, consumers are willing to change consumption and purchase habits for the sake of production systems that are in line with their values.

## MATERIALS AND METHODS:

To achieve the aim of the study, a quantitative research method and case study research design were used. The case study design was used to support an empirical investigation (Gibson & Fedorenko, 2013) in 4 districts in Uganda which include Kampala, Wakiso, Mityana and Kyotera districts, targeting consumers of poultry products specifically eggs and chicken meat. The target population of the study was derived from the total population of 4,349,771 people from the 4 districts, that is; 1,507,080 people in Kampala district, 328,964 people in Mityana, 516,309 people in Kyotera and 1,997,418 people in Wakiso. The study used a simple random sampling technique to determine the sample size which comprised of consumers of poultry products that particularly live in urban areas. However, the study considered a population of 30 consumers from an urban area of each district, which made a total of 120 respondents. The simple random sampling technique had high generalizability of findings (Polit & Beck, 2010); hence it was suitable for a large study population of consumers.

Personalized interviews were conducted using comprehensive questionnaires targeting consumers of poultry products within the 4 districts including Kampala, Wakiso, Mityana and Kyotera district, which was cut off Rakai district in 2017 (Nakatudde, 2015). The questionnaires were physically administered. The questionnaire was composed of a written set of open and closed-ended questions that were given to the consumers of poultry products in order to collect

facts or opinions about the gaps on their awareness of the use of battery cage poultry farming and issues around poultry production. The researcher was able to collect large amounts of primary data in a short time with integrity, which was coded and analyzed using a user-friendly software, the Statistical Package for Social Scientists (SPSS).

## RESULTS:

The researcher issued out 120 (100%) questionnaires to consumers of poultry products within the 4 districts (Kampala, Wakiso, Mityana and Kyotera) in Uganda and were all successfully filled by the respondents, which gave the response rate of 100%. The background characteristics of the respondents included consumer type, sex and age.

**Consumer Details:** About 67.5% of the respondents (81/120) were non affluent while 32.5% of them (39/120) were affluent. The majority, 52.5% of the respondents (63/120) were females while 47.5% of the respondents (57/120) were males. No respondent was below 12 years of age, 11.7% of the respondents (14/120) were aged between 13 to 25, 42.5% of the respondents (51/120) were aged between 26 to 40 while 45.8% of the respondents (55/120) were aged between 41 to 60.

**Table 1: Social demographic characteristics of respondents (N=120)**

| Characteristic | Category     | Frequency        |                 |                  |                  | Total freq | Percent (%) | Total percent (%) |
|----------------|--------------|------------------|-----------------|------------------|------------------|------------|-------------|-------------------|
|                |              | Kampala district | Wakiso district | Mityana district | Kyotera district |            |             |                   |
| Type           | Affluent     | 9                | 14              | 10               | 6                | <b>39</b>  | <b>32.5</b> | <b>100.0</b>      |
|                | Non affluent | 21               | 16              | 20               | 24               | <b>81</b>  | <b>67.5</b> |                   |
| Sex            | Male         | 12               | 18              | 13               | 14               | <b>57</b>  | <b>47.5</b> | <b>100.0</b>      |
|                | Female       | 18               | 12              | 17               | 16               | <b>63</b>  | <b>52.5</b> |                   |
| Age            | 12 and below | 0                | 0               | 0                | 0                | <b>0</b>   | <b>0.0</b>  | <b>100.0</b>      |
|                | 13 to 25     | 6                | 2               | 6                | 0                | <b>14</b>  | <b>11.7</b> |                   |
|                | 26 to 40     | 16               | 15              | 9                | 11               | <b>51</b>  | <b>42.5</b> |                   |
|                | 41 to 60     | 8                | 13              | 15               | 19               | <b>55</b>  | <b>45.8</b> |                   |

*Source: Primary data (2021)*

*N is total number of respondents (consumers of poultry products)*

**Where poultry products are bought:** Only 31.7% of the respondents (38/120) usually bought poultry products from supermarkets while 68.3% of the respondents (82/120) bought poultry products from local or nearby shops as shown in table 2. Thus, majority of the consumers in Kampala, Wakiso, Mityana and Kyotera districts usually bought poultry products from local or nearby shops.

**Table 2: Where poultry products are bought**

| Purchase location | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|-------------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|                   | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Supermarket       | 11               | 8               | 10               | 9                | <b>38</b>       | <b>31.7</b>  |
| Local/nearby shop | 19               | 22              | 20               | 21               | <b>82</b>       | <b>68.3</b>  |
| <b>Total</b>      | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**Average expenditure of poultry products per month:** Only 23.3% of the respondents (28/120) usually spend less than 20,000 shs on poultry products every month, 39.2% of the respondents (47/120) spend between 20,000 shs to 100,000 shs while 37.5% of the respondents (45/120) spend more than 100,000 shs on poultry products every month as shown on in table 3.

**Table 3: Average expenditure of poultry products per month**

| Expenditure               | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|---------------------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|                           | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Less than 20,000 shs      | 9                | 4               | 12               | 3                | <b>28</b>       | <b>23.3</b>  |
| 20,000 shs to 100,000 shs | 9                | 12              | 8                | 18               | <b>47</b>       | <b>39.2</b>  |
| More than 100,000 shs     | 12               | 14              | 10               | 9                | <b>45</b>       | <b>37.5</b>  |
| <b>Total</b>              | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**Poultry production system known:** Only 25.8% of the respondents (31/120) had knowledge about deep litter production system, 38.3% of the respondents (46/120) had knowledge about battery cage production system and 35.8% (43/120) had knowledge about free rage production system as shown in table 4. Thus, the study findings show that most consumers had much knowledge about poultry production systems, especially battery cage system.

**Table 4: Poultry production system known**

| Production system | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|-------------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|                   | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Deep litter       | 3                | 15              | 9                | 4                | <b>31</b>       | <b>25.8</b>  |
| Battery           | 19               | 7               | 9                | 11               | <b>46</b>       | <b>38.3</b>  |
| Free range        | 8                | 8               | 12               | 15               | <b>43</b>       | <b>35.8</b>  |
| <b>Total</b>      | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**Preference for products from any of the production systems:** Only 21.7% of the respondents (26/120) preferred products from deep litter production system, 31.7% of the respondents (38/120) preferred products from battery cage production system while the majority, 38.3% of the respondents (46/120) preferred products from free range production system.

**Table 5: Preference for products from any of the production systems**

| Preferred product | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|-------------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|                   | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Deep litter       | 4                | 12              | 5                | 5                | <b>26</b>       | <b>21.7</b>  |
| Battery           | 12               | 5               | 8                | 13               | <b>38</b>       | <b>31.7</b>  |
| Free range        | 10               | 12              | 13               | 11               | <b>46</b>       | <b>38.3</b>  |
| Not concerned     | 4                | 1               | 4                | 1                | <b>10</b>       | <b>8.3</b>   |
| <b>Total</b>      | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**Awareness of welfare requirements for poultry produced in the mentioned production systems:** Majority, 95% of the respondents (114/120) were aware of the welfare requirements for poultry produced in the productions systems, especially battery cage system. While only 5% of the respondents (6/120) were not aware of the welfare requirements.



**Table 6: Awareness of welfare requirements for poultry produced in the production systems mentioned**

| Option       | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|--------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|              | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Yes          | 29               | 29              | 27               | 29               | <b>114</b>      | <b>95.0</b>  |
| No           | 1                | 1               | 3                | 1                | <b>6</b>        | <b>5.0</b>   |
| <b>Total</b> | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**Indicating the production systems on the products sold in the market:** Over 95% of the respondents (114/120) accepted that the producer should indicate the production systems on the products sold in the market while only 18.3% of the respondents (22/120) objected the idea.

**Table 7: Indicating the production systems on the products sold in the market**

| Option       | Frequency        |                 |                  |                  | Total frequency | Percent (%)  |
|--------------|------------------|-----------------|------------------|------------------|-----------------|--------------|
|              | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |              |
| Yes          | 23               | 29              | 23               | 23               | <b>98</b>       | <b>81.7</b>  |
| No           | 7                | 1               | 7                | 7                | <b>22</b>       | <b>18.3</b>  |
| <b>Total</b> | <b>30</b>        | <b>30</b>       | <b>30</b>        | <b>30</b>        | <b>120</b>      | <b>100.0</b> |

*Source: Primary data (2021)*

**If the respondent would pay a higher price for poultry products raised in better welfare and quality production systems:** Over 86.7% of the respondents (104/120) accepted that they would pay a higher price for poultry products raised in better welfare and quality production systems while only 13.3% of the respondents (16/120) objected the idea.

**Table 8: If the respondent would pay a higher price for poultry products raised in better welfare and quality production systems**

| Option | Frequency        |                 |                  |                  | Total frequency | Percent (%) |
|--------|------------------|-----------------|------------------|------------------|-----------------|-------------|
|        | Kampala district | Wakiso district | Mityana district | Kyotera district |                 |             |
| Yes    | 23               | 28              | 27               | 26               | <b>104</b>      | <b>86.7</b> |

|              |           |           |           |           |            |              |
|--------------|-----------|-----------|-----------|-----------|------------|--------------|
| No           | 7         | 2         | 3         | 4         | 16         | 13.3         |
| <b>Total</b> | <b>30</b> | <b>30</b> | <b>30</b> | <b>30</b> | <b>120</b> | <b>100.0</b> |

*Source: Primary data (2021)*

### **Pressing Issues regarding Welfare of Poultry**

Remarks from the majority of consumers in Kampala, Kyotera, Mityana and Wakiso districts showed that most of the pressing issues regarding welfare of poultry include diseases such as chicken pox, coccidiosis and pneumonia, which spread easily in deep litter and battery cage systems compared to free-range system. On this note, it was noted that chicken need to always be vaccinated from such diseases, which is expensive and sometimes it may be poorly done by unskilled farmers.

Results also showed that chicken raised under free-range system are usually bigger in size. However, they usually take long to grow compared to those raised under deep-litter and battery cage systems, which produce chicken that are most of the times small in size due to lack of enough space for exercising and lack of nesting opportunities that in the long run results into severe frustration for mostly layers. This is in line with the argument of Mench (2017) that most of the conditions in which chicken live and procedures they are subjected to usually compromises their welfare.

Finally, results showed that there were less/poor strict biosecurity measures and a number of poultry houses were poorly constructed which could attract thieves and compromised welfare of chickens. It was also revealed that poultry feeds were expensive which caused low quantities served to the chicken, hence poor productivity and low supply of poultry products to the market.

### **Concerns with the Quality of Poultry Products found at Sale point**

Over half of the consumers were concerned with the sale of pre-mature exotic chicken expensively yet they are not as tasty as local breeds raised under free-range system. Some chickens were confirmed to be brought for sale when they are not in good health or were still under treatment which threatens consumers' health. This is similar to report by De Jonge and van Trijp (2013) asserting that consumers can fail to purchase poultry products due to different reasons such as higher prices, weight of the birds and depending on the production information provided by the farmer. However, they noted that some birds are sold expensively in comparison of the welfare they have been given during production

They were also concerns with the lack of product labeling for proper identification and poor packaging which leads to egg breakages. Consumers were also concerned with poor sanitation at the sales points and the different sized eggs sold at the same price. Additionally, majority of the consumers were not concerned about the quality of products found at the sales points provided they are affordable to them.

## DISCUSSION:

In this study, majority of the consumers of poultry products were females aged between 41 to 60 and non-affluent. This implies that most of the consumers in the study areas, Kampala, Wakiso, Mityana and Kyotera districts were women who sometimes are not able to afford to consistently buy poultry products in large quantities (Wong et al., 2017)

Most of the consumers bought poultry products from local or nearby shops than supermarkets. This is in line with the results of the study by Martínez-Michel, Anders & Wismer (2011) that over 70% of the respondents often purchased chicken meat from farmers' markets or meat shops than in supermarkets. Long & Altermanc (2007) asserted that a number of the eggs sold in supermarkets may be inferior in nutrition compared to the eggs sold in farmers' markets.

Most of the consumers usually spend between 20,000 shs to 100,000 shs on poultry products every month according to their non affluent income status. Consumers had knowledge about deep litter, battery cage and free-range production systems. But the study findings show that most consumers had much knowledge about battery cage production system. This is in line with what Vernooij, Masaki & Meijer-Willems (2018) asserted that in Southern and Eastern African countries, poultry production has gradually grown from a system of backyard keeping to a more commercial and professional poultry value chain. However, it is contrary to the results of the study by Erian and Philips (2017) which showed that most of the consumers had limited knowledge about production systems.

Consumers preferred products from all production systems including deep litter, battery cage and free-range production system. Not surprisingly, majority of the consumers preferred products from free range production system because they are healthier good quality products. This is supported by Tosar et al. (2021), European Commission (2018) and McNamara (2015) who noted that hens of free range usually produce eggs that are bigger in size and healthier than those produced by hens of battery cage system. Unlike the hens raised conventionally, research also shows that free-range chicken does not disrupt hormones (Ahmad et al., 2017) and usually taste better than conventional birds because they feed on high-quality diet. Eggs layed by free-range hens usually have more vitamin A, less saturated fat, 7 times more beta-carotene, less cholesterol and 2 times more omega-3 (Brümmer, Christoph-Schulz and Rovers, 2017).

Majority of the respondents were aware of the welfare requirements for poultry produced in the productions systems, especially battery cage system. This is contrary to some European studies for example by (Grunert, Hieke & Wills, 2014) which revealed that consumers usually have little awareness about labels on poultry products.

Most consumers accepted the idea that the producer should indicate the production systems on the products sold in the market. This is in line with the argument that poultry products within the EU are subject to cataloging and labeling based on production systems (Kleter et al., 2018). Thus, products should always be labelled according to the system used in their production such as free-range, battery cage or deep litter. Illustrating how sensitive production can be to welfare considerations, in the UK from 2006 to 2017 there has been a doubling in the production and output of free-range eggs, while enriched cages in intensive

systems have seen a slight decrease in production (Defra, 2017) - so, when it comes to eggs at least, it seems the growing demand is being met by less intensive forms of farming, thanks to consumers opting for products labelled “free-range”. The preference for labeling products with specific distances in miles/kilometers has also been elicited by consumers in Grebitus et al. (2013), although such labeling is often challenging for producers selling into different channels (Escobedo del Bosque, Spiller & Risius, 2021).

Majority of the consumers accepted that they would pay a higher price for poultry products raised in better welfare and quality production systems. This is similar to the findings of the study by Straughter (2021) that over half of the participants in the study were willing to pay an additional 30% for value-added chicken products, especially free-range products. The study by Żakowska-Biemans & Tekień (2017) revealed that both the production system and price have a high relative importance for the consumers and that consumers have shown a higher willingness to pay more for animal-based products when presented with information about animal welfare.

## CONCLUSIONS:

The aim of this study was successfully achieved providing information about consumer gaps on awareness of the use of battery cage poultry farming in Uganda and the issues around poultry production. For example, most consumers of poultry products were females aged between 41 to 60 and non-affluent, buying poultry products from local or nearby shops and usually do not spend a lot of money on poultry products every month. Consumers largely had more knowledge about battery cage than other production systems, although majority of them preferred products from free range. On the same note, most of them were aware of the welfare requirements for poultry produced in the productions systems, especially battery cage system and accepted the idea that the producer should indicate the production systems on the products sold in the market, for which they would pay a higher price if raised in better welfare and quality production systems.

The study realized that free-range products are mostly preferred by consumers compared to deep litter and battery cage products because of their healthier good quality by the fact that they are usually raised in good welfare conditions. This also supports arguments by lobby groups of animal welfare such as NGOs to evidently speak against the battery cage poultry rearing system, that exposes chickens to high levels of stress and denies them movement rights. However, results show that majority of the consumers had more knowledge about battery cage production system than other types probably for commercial purposes. A number of studies such as by Atela (2016) have shown that battery cage system has recently been gaining much popularity, making farmers to base on their preferences or purpose to choose between the three systems. In summary, this study recommends that strict policy frameworks and regulations should be implemented country-wide so that all consumers can acquire more knowledge about the available poultry production systems and their welfare requirements, which greatly influences their purchase and consumption behaviors.

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**LIST OF TABLES:**

Table 1: Social demographic characteristics of respondents (N=120) ..... 5

Table 2: Where poultry products are bought ..... 6

Table 3: Average expenditure of poultry products per month ..... 6

Table 4: Poultry production system known ..... 7

Table 5: Preference for products from any of the production systems ..... 7

Table 6: Awareness of welfare requirements for poultry produced in the production systems mentioned..... 8

Table 7: Indicating the production systems on the products sold in the market..... 8

Table 8: If the respondent would pay a higher price for poultry products raised in better welfare and quality production systems..... 8