



Contribution of the informal market of village chickens to sustainable livelihoods in KwaZulu-Natal, South Africa

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Training;
Vending

ABSTRACT

The study aimed to determine the contribution of the informal market of village chickens to sustainable livelihoods. The study was conducted in two purposively selected cities namely Durban and Pietermaritzburg, KwaZulu-Natal, South Africa, Central Business District (CBD). A questionnaire was administered to village chicken vendors in the CBD. A total of 50 village chicken vendors which were limited in the CBD, were found and interviewed. In both Durban (100%) and Pietermaritzburg (77%), the majority of village chicken vendors were women ($P < 0.05$). Village chicken vendors depended on selling chickens and vending other commodities in both cities ($P > 0.05$) to generate income (100%). None (0 %) of the village chicken vendors were exposed to chicken farming training on village chickens in Durban and 11% in Pietermaritzburg have been exposed to training ($P < 0.05$). Over 85% were interested in attending chicken farming training in both areas. There was a significant difference ($P < 0.05$) between the main source of income and the uses of chickens. The use of village chickens influenced the main source of income, which was not limited to income generation or leisure. It was concluded that the informal market for village chickens contributes to sustaining livelihoods through income, consumption and culturally driven. It is recommended that access to training and resources can grow the informal market.

INTRODUCTION

In 2050, the world population is expected to increase by at least 2.5 billion (Galimova *et al.*, 2022) and the demand for animal protein will also increase drastically. This suggests creating

traditional markets using untapped animal resources such as village chickens for protein alternatives. Using underutilized animal resources through informal village chicken vending may prevent insufficient conventional protein sources in developing countries that may come with population increase. There has been a

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growing interest in investigating informal market village chicken in response to the agenda of Sustainable Development Goals. Informal village chicken vending refers to producing and selling legal goods and services in urban public spaces in temporal structures (Recchi, 2021). There is a great potential for informally vending village chicken, especially for vulnerable groups in resource-poor settings. Since the informal sectors are mostly ignored or unsupported by the government, individuals are discouraged to participate in this sector (Brown, 2006). The informal market of village chicken has the potential to contribute immensely to achieving specific Sustainable Development Goals (SDGs), such as No Poverty (SDG1) and Zero Hunger (SDG2), particularly for the vulnerable group if the correct measures are taken (Wilson *et al.*, 2021). Achieving SDG2 in Sub-Saharan Africa is challenging as the population is rapidly growing, which demands a large amount of animal proteins.

Village chicken (*Gallus domesticus*) production in Africa is practiced in rural communities (Boudali *et al.*, 2022). In South Africa, individuals mostly own village chickens based in resource-poor settings commonly known as rural areas. Their major role in these areas is to provide animal protein through eggs and meat which are crucial for income generation through sales (Elsiddik, 2022). Village chickens are also crucial for traditions and rituals of different ethnicities. However, the production of village chickens is hampered by various challenges, including a high mortality rate, disease prevalence, poor technical support, predation,

theft, and poverty. They are reared under an extensive production system with a flock size of less than 100 that depends on scavenging for feed resources (Chowdhury, 2013). This system is characterized by low input and low output as there are no or minimal inputs such as housing, feeding, and health control, resulting in a high mortality rate that reduces the flock size. Village chickens are primarily bred and reared for meat, eggs, cultural practices and income to contribute to family consumption (Mujyambere *et al.*, 2022). Considering the poor socio-economic status and food and nutrition insecurity in resource-poor settings of KwaZulu-Natal, South Africa, solutions and recommendations are needed by communities. Village chicken vendors are selling village chickens in the Central Business District for income and they are very scarce. Understanding the dynamics of the village chicken informal market is important to identify gaps and challenges to provide appropriate interventions. This study aimed to assess how the informal market of village chickens contributes to sustainable livelihoods in KwaZulu-Natal. It was hypothesized that village chickens do not contribute to the informal market for sustainable livelihoods.

MATERIALS AND METHODS

Study area

The study was conducted in Pietermaritzburg as shown in Figure 1, which is the capital city of uMsunduzi Municipality within the Province of KwaZulu-Natal. It is located on the tropical eastern coast of South Africa (Nicolson, 2010).

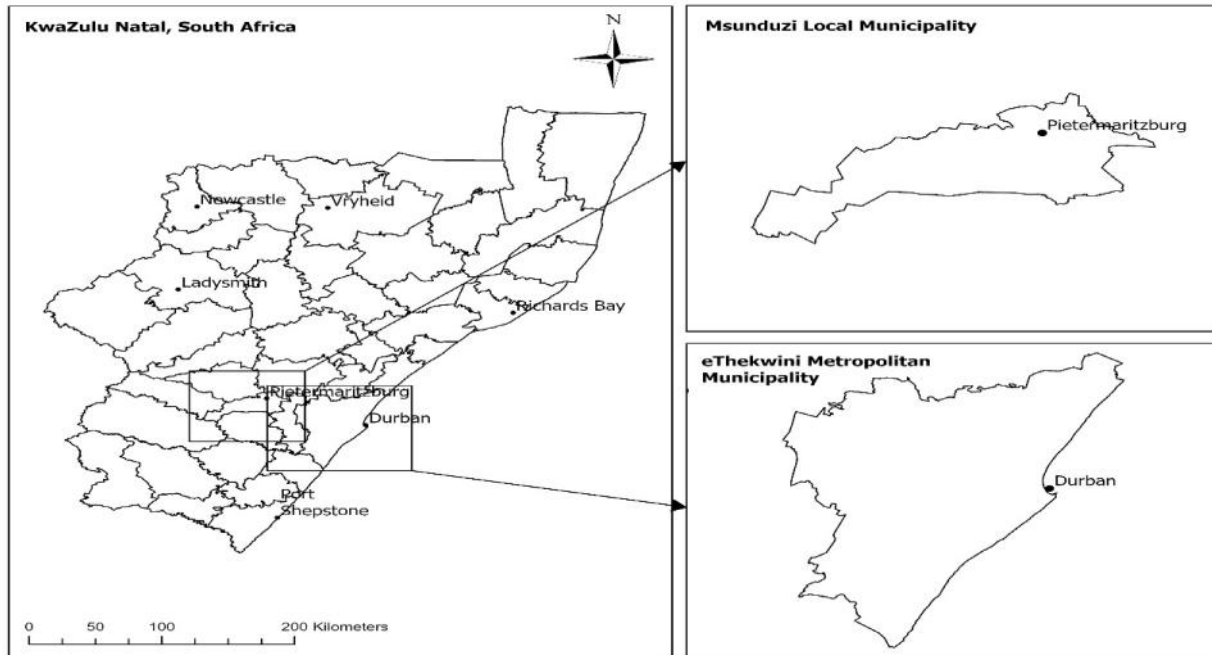


Figure 1: Geographical map of KwaZulu-Natal the study sites in Durban and Pietermaritzburg cities

Pietermaritzburg (29°37 S 30°23 E) experiences summer rainfall and a warm and temperate climate. The average annual rainfall is 865.3 mm, with average maximum temperatures

ranging from 22.6°C to 24.5°C and minimum temperatures ranging from 9.9°C to 16°C. The current population is estimated to be over 600,000 residents in Pietermaritzburg.



Figure 2: Village chicken vendors with cages (a and b) in Pietermaritzburg Central Business District. Interviewing village chicken vendors (c) chicken cages in Durban Central Business District (d)

Durban is a major coastal city on the eastern coast under eThekweni Metropolitan Municipality in South Africa. The city also known as a tourist venue (Koopman, 2012). The

central business district is located adjacent to the harbor which is the most important contributing factor to the city's economy (Timm, 2011). Durban (29°53 S 31°03 E) has an annual

rainfall of 1,009 millimeters and the average temperature in summer is around 24 °C, while in winter the average temperature is 17 °C. The

Durban suburbs and neighboring towns have a population of about 3.44 million.

Table 1. The description of the data source of village chicken vendors

Variable	Description	Reason for the information request
Demographic data	Owners of the chickens, Gender of the owners and age distribution	Identifying participants in the traditional market of village chickens
Income sources	Village chicken keepers	Evidence on the level of dependency on village chickens
Reason for selling village chickens	Options such as income and food	Indicate the objectives of village chicken vendors which influence the willingness to participate in this system.
The duration of selling village chickens	Years in the Central Business District	The number of years to indicate the time in years spent participating in the market
Targeted population group	Race that should buy the chickens	The type of population group targeted for this informal market
The population group that frequently buy	The race that buys the most	The population group that responds to the informal market of village chickens
Type of feed for village chickens	Feed type	To understand what they are feeding chickens in cages
The duration of village chickens in the cage	How many hours do village chickens spend in cages	To understand and identify the animal welfare of village chickens in the informal market
The type of knowledge	The type of knowledge systems used	The type of knowledge used is important to understand the rearing system
The uses of different breeds	Type of breeds and functions	The function of different types of breeds

Statistical analysis

All data were analyzed using SAS (2011). All demographic characteristics in Durban and Pietermaritzburg were analyzed. The association was measured using Chi-square tests between demographic parameters. The PROC FREQ /CHISQ test was used.

$$V = \sqrt{\frac{X^2}{n \cdot d^*}}$$

Cramer's V was used to measure and examine the strength of the association between two variables using the following model:

$V = \sqrt{\frac{X^2}{n}}$ is the chi-square value $df^* = \min(r-1, c-1)$ and $r =$ the number of rows and $c =$ the number of columns in the contingency table and $n =$ the total sample size.

RESULTS

Description of village chicken vendor's demographics

The participants (i.e. village chicken vendors in both Pietermaritzburg and Durban) interviewed were women and men over 18 years of age. The gender of village chicken vendors had a significant difference ($P < 0.05$) in both cities as

more females were participating in vending village chickens compared to men. In Durban, all (100%) village chicken vendors were female, and 77% of vendors in Pietermaritzburg were female. The age of village chicken vendors ranged from 40 to 50 years (62%) and 50 to 60

years (26%) were common ($P > 0.05$). In Durban, 32% of village chicken vendors have participated in the informal market for over 30 years ($P < 0.05$) in Pietermaritzburg. Their source of income included vending of chickens, vegetables and pension, as shown in (Table 2).

Table 2. The demographic of the informal market village chicken vendors in Durban and Pietermaritzburg Central Business District

Demographic characteristics	Durban%	Pietermaritzburg%	P Value
Gender of the trader			
Female	100	77	*
Male	0	23	
Age of the trader (years)			
20 to 30	16	0	NS
30 to 40	21	15	
40 to 50	21	62	
50 to 60	26	15	
60 to 70	16	8	
Duration of trading (years)			
Less than 5	21	13	*
More than 5	5	41	
More than 10	21	28	
More than 20	21	15	
More than 30	32	3	
The major source of income			
Vending other commodities	47	54	NS
Pensioner	0	0	
Vegetables	0	8	
Chickens	53	38	
Purpose of selling			
Income	100	100	NS
Barter exchange	0	0	
Leisure	0	0	
Training of village chicken vendors			
Training attended	0	11	
Not attended training	100	89	*
Interest to attend	85	95	
No interest in attending	15	5	*
Access to extension officer	8	5	
No access to extension officer	92	95	*

NS = Not significant ($P > 0.05$), *significant ($P < 0.05$)

In Pietermaritzburg, more than half of the participants (54%) depended on vending other commodities; in Durban, 53% relied on vending village chickens. A total of 100% of village chicken vendors relied on vending village chickens for income generation in both areas while none was selling for barter exchange and leisure.

The importance of knowledge to village chickens

Figure 4 below indicates different types of knowledge used in rearing village chickens for

income generation. Village chicken vendors depended greatly on indigenous knowledge (89%), followed by the combination of indigenous and scientific knowledge (10%) and lastly, scientific knowledge (1%). The results (Table 2) indicated that only 11% of village chicken vendors received training with 95% willingness to attend in Pietermaritzburg. Less than 10% of extension officers were available for village chicken vendors to provide knowledge in Durban and Pietermaritzburg.

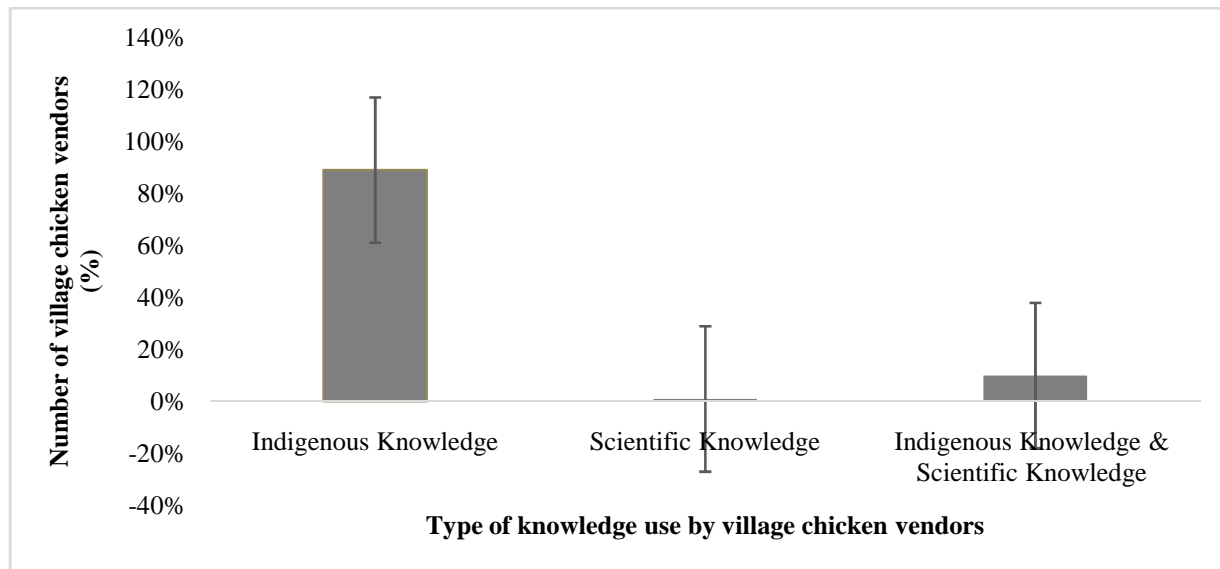


Figure 4: The knowledge used by village chicken vendors in the village chicken markets

Consumers of village chickens by population group

Figure 5 below indicates the population group that purchases village chickens largely. All population groups were targeted to buy village

chickens. Results suggest that Africans (82%), followed by Asians (2%), were the predominant consumers of village chickens. Village chicken vendors showed a significant difference ($P < 0.05$) in the preferred chickens to sell in both Durban and Pietermaritzburg. Live chickens (98%) were preferred over cooked meat (2%).

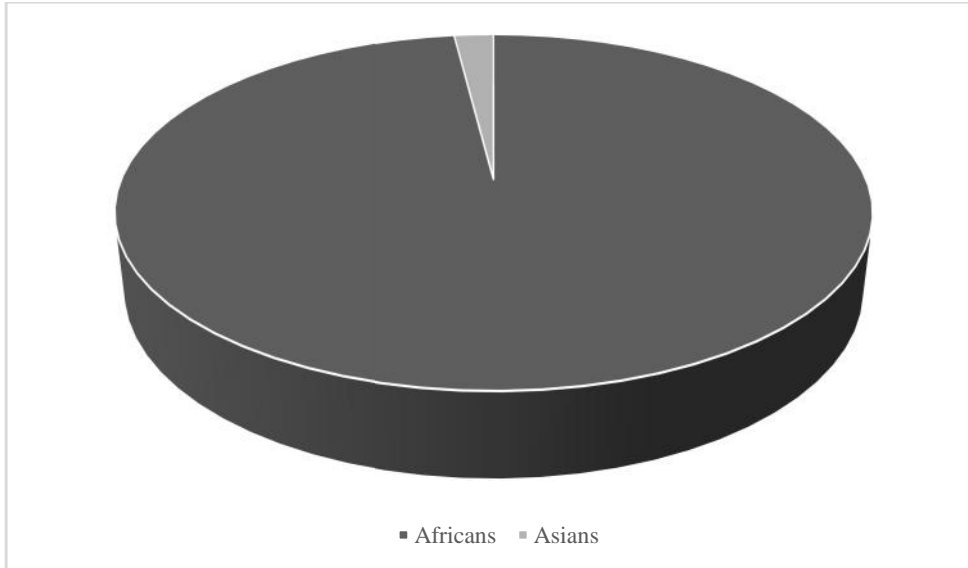


Figure 5. The consumers of village chickens in both Durban and Pietermaritzburg

Type of village chicken breeds for cultural practices.

Figure 6 below indicates the type of village chicken breeds sold by village chicken vendors and breeds in demand in the market. Potchefstroom Koekoek (*Impangela*) is the most sold breed (97%), followed by Boschveld (*Ezibomvu*) (94%), Black Australorp (*Ezimnyama*) (75%) and Broilers

(*Ezihlophezesingisi*) (72%). Results in figure 6 showed that there were breeds demanded in the market such as Potchefstroom Koekoek (*Impangela*) (69%) and Boschveld (*Ezibovu*) (69%). Durban and Pietermaritzburg village chicken breeds have various purposes in the informal market regarding cultural practices. Each breed has its specific function in communicating with ancestors in these areas.

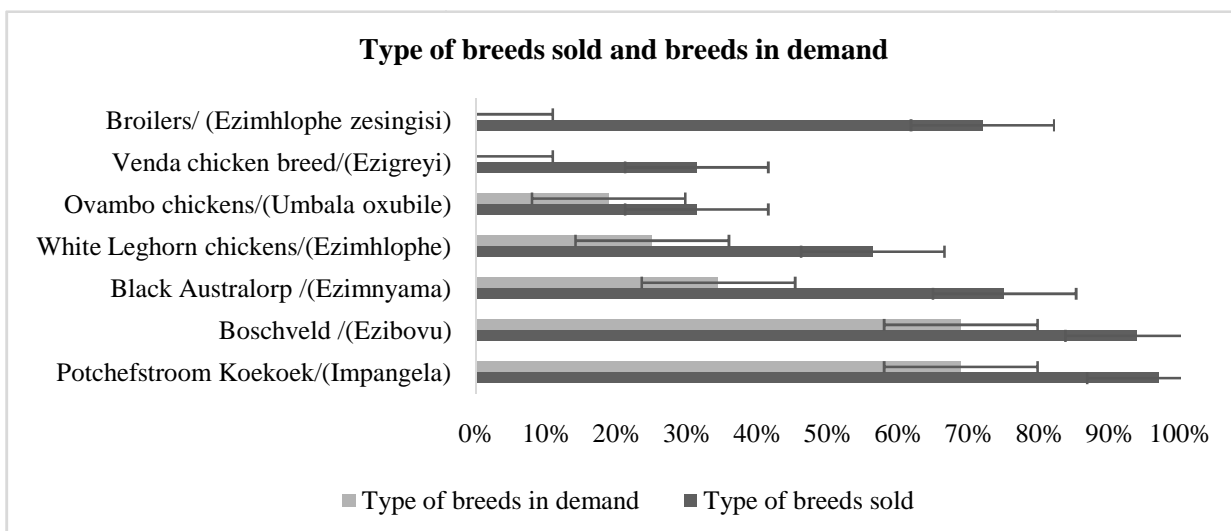


Figure 6. Breeds sold and in demand in the village chicken market

Table 3 shows the level of association in two variables of village chicken vendors in both Durban and Pietermaritzburg. The results indicated a strongest (0.64) insignificant association between type of breed in demand and the reason for breeds in demand.. In addition, the association between gender and

age was the weakest (0.28). There was a significant difference ($P < 0.05$) between the major source of income and the uses of chickens. The lowest association compared to the breed type in demand and reasons for breeds in demand was insignificant ($P > 0.05$).

Table 3. The strength of associations on village chicken vendors in Durban and Pietermaritzburg

Associations	Cramer's V	P value
Gender * Age	0.28	NS
Duration of selling * Major source income	0.30	NS
The major source of income * Uses of chickens	0.60	*
Type of chicken preference * Reasons for preference	0.33	NS
Type of breed in demand * Reasons breeds in demand	0.64	NS

Cramer's V is $-1 \leq V \leq 1$ where -1 is the weakest and 1 is the strongest association.

Important information, recommendations and questions from village chicken vendors

Village chicken vendors rent for R250 to the municipality monthly to sell village chickens in the Central Business District. A total of 100% of village chicken vendors feed yellow maize grain to village chickens daily in cages with 70% buying and 30% planting their maize. Village chickens in cages were housed for 24 hours daily until one is sold to the customer, with the flock size ranging from 10 to 20 chickens per cage. Village chicken vendors only sourced chickens from village chicken producers if funds were available. Results indicated that a cock costs an average of R100 and a hen is R70 depending on the breed. Village chicken vendors sell village chickens in conjunction with crop seeds, sweet potatoes and herbal plants. They were interested in receiving training in poultry management. Concerns about how the government can provide a market for village chickens were observed. Questions on who to consult regarding village chickens were

populated predominantly in Durban compared to Pietermaritzburg.

DISCUSSION

In the current study, the majority of village chicken vendors were women compared to men. This is in line with (Chawala, 2022), who reported that the value chain of village chickens is mainly dominated by women and is regarded as a women's value chain. Similar results of Oguttu (2015) indicated that the majority of vendors of chickens are females between the age of 25-50. On the other hand, it is proven that in South Africa, village chickens play a significant role socially, traditionally and economically but this niche is underutilized and poorly managed. Simbizi *et al.* (2022) stated that village chickens were of benefit in South Africa but the sector is underdeveloped. It is evident in the study areas that village chicken vendors depend on indigenous knowledge when rearing village chickens. Gunya *et al.* (2020) indicated that there is less or no information available on village chicken production and their contribution to South Africa. The vending of village chickens in the Central Business

District of the two largest cities is an indication that there is a market for village chickens that the policymakers do not recognize in KwaZulu-Natal. In contrast, in the Eastern Cape, South Africa, Gunya *et al.* (2020) showed that farmers are not selling village chickens because there is no market for these types of chickens. Meanwhile, Assefa (2019) suggested that the domestic market of village chickens through sales of both chickens and eggs creates the opportunity to generate income in Ethiopia.

In South Africa, the country faces challenges such as high unemployment rate and low-skilled communities. As shown in the study, the major source of income of these farmers is vending various commodities in the cities. Street vendors have the potential to build a livelihood and contribute to the economy (Hlengwa, 2016). The findings demonstrated that individuals in resource-poor communities resort to the vending of village chickens for more than 30 years of their lives as the main source of income. As indicated by Reinecke and White (2004), street vending is growing rapidly in developing countries as a response to poverty. This concurs with the current study that the purpose of vending village chickens was for income generation which were used in the homestead for needs such as school fees, groceries and transport. Musa (2022) argued that religion and cultural practices are the other reasons for rearing village chickens. At the same time, village chickens are regarded as the primary source of investment for both women and children (Mujyambere *et al.*, 2022). Idamokoro and Hosu (2022) suggested that sales are the only way to generate income through village chickens.

The present study stated that there were no extension services from the government and other institutions to assist with scientific knowledge on how to rear village chickens correctly. Lee *et al.* (2022) revealed that gender inequalities concerning less access to extension

services for women have been corrected. The finding that most village chicken vendors depend largely on indigenous knowledge to rear and grow village chickens was expected because formal information or scientific knowledge is not available and accessible. Indigenous knowledge is referred to as philosophies created by societies with long histories of interaction with their natural surroundings (Rogelj *et al.*, 2018).

The findings of the current study revealed a strong connection between gender and age of village chicken vendors, as women were shown to be the most populated group in this market. In Sub-Saharan Africa, over 70% of village chicken owners are female and assisted mainly by children and other women (Guèye, 2000). On the other hand, the duration of selling village chickens and the major source of income were less connected since there were different ways of creating income rather than selling chickens such as vending other commodities. In developing countries, street food vending has become one of the sources of income (Mwangi *et al.*, 2002). Hence, the current study suggests selling village chickens can be more significant as a major source of income if correct measures such as management and training were provided to village chicken vendors.

The study found that village chicken vendors were interested in selling uncooked and cooked meat, but most preferred selling live chickens. However, Manickavasagam (2018) indicated that various products such as fruits, vegetables, shoes, newspapers and magazines were also sold by vendors. But regarding the current study, vending of village chickens had its challenges as cages, slaughtering rooms, stoves to cook, load shedding and low demand for these products. However, village chicken vendors were open to the idea that assistance could be provided.

In the study, village chickens were accessible to every population group but Africans and Pakistanis living in South Africa were the frequent consumers of this product. Africans use village chickens primarily for cultural practices and Pakistanis use them for consumption. Unathi *et al.* (2017) argued that the demand and consumption of village chickens in South Africa is unknown. Village chicken vendors suggested that village chickens were sold according to breed and breeds in demand for cultural purposes beneficial to the business. For instance, Potchefstroom Koekoek (Impangela) is essential for ancestral ceremonies while Black Australorp (Ezimunyama) is used for traditional cleansing. Most village chicken vendors made high profits from these breeds and there was a strong connection between breeds sold and breeds in demand.

In the current study, village chicken vendors were invested in selling village chickens and interested in producing for themselves while learning more about poultry. But queries and worries such as seeking government assistance were indicated. The biggest challenge was there is no formal market and relevant stakeholders are required in addressing issues and interventions to formalise the existing market. These challenges also include storage as village chickens are stored and confined in cages for 24 hours daily with a high stocking density. This is a welfare issue as village chickens are scavengers by nature they need to roam around and look for feed resources. This indicates a lack of relevant knowledge and a violation of the five freedoms of animal husbandry but this scientific knowledge is not available to individuals in resource-poor communities. High stocking density in a small cage for so many hours results from a lack of knowledge. Increasing stocking density can encroach on chicken's freedom to express natural behaviour (Tallentire *et al.*, 2019). They must exercise their natural behaviour like to roam around and scavenge for feed. Village chickens obtain most

of their diet by scavenging for both food and water (Gunya *et al.*, 2020). Tenza *et al.* (2023) suggested the development of programs focusing on village chickens for livelihood transformation and women empowerment in resource-poor communities.

In the study, village chickens were provided with maize once or twice per day depending on the sales and profit because buying maize was a challenge. The vendor complained about the price and resorted to restricting feeding chickens to avoid buying more frequently. Depending on one nutrient source may affect the quality of the meat as other nutrients were limited since village chickens were caged for 24 hours. Gondwe and Wollny (2007) showed that village chickens scavenge naturally, and most farmers used maize as a feed supplement.

The market price for chickens was discussed among each other to avoid losing customers and contradictions. Therefore, prices were uniform but depended greatly on the size and type of breed sold. However, no digital scale was available to measure the size of the chicken, so visual observations were used. This is in line with Tilahun *et al.* (2022) who argued that the price of village chickens was influenced by body size and plumage. Similarly, village chickens are considered a high-quality product sold at a higher price (Selamat *et al.*, 2022). Other village chicken vendors sold both broilers and village chickens, and the demand was the same in the market. Broilers were significantly added as substitutes if sales for village chickens were low.

In the current study, the vendor's preference for village chickens was due to low inputs such as terms of feed, compared to broilers. This is similar to Alam *et al.* (2020) who revealed that village chickens are always preferred due to their low production cost as they are reared through scavenging of feed resources. Vending chickens in conjunction with other indigenous

herbal plants was significantly suggested for income generation in case there were no chicken sales. The study revealed the eagerness of vendors to attend training on village chickens to improve productivity and disease control, improve knowledge, and expand the business.

CONCLUSION & RECOMMENDATIONS

The study concludes that village chicken vendors use village chickens to sustain livelihoods in KwaZulu-Natal, South Africa. Even though the market is populated by women from youth, adults and old age. The market has existed for over three decades and plays a role for vulnerable groups in resource-poor settings. Village chickens are mainly sold for cultural practices as certain breeds are in demand compared to others. The considerable challenge is the lack of support from different stakeholders to allow the informal market in the main stream value chain as it benefits individuals who lack skills, are unemployed and suffer from hunger. It is recommended that organizations are needed to offer training and provide resources to grow the informal market of village chickens that are located in big cities. This has the potential for a more significant impact and influence on policy. It is also recommended to use underutilized products such as village chickens in achieving the 2030 vision such as SDG 1 and 2, in resource-poor communities as they lack skills and opportunities.

Conflict of Interest

Authors declare no conflict of interest.

Ethics statement

The study was conducted based on the standards required by the Human Social Science Ethics Committee of the University of KwaZulu-Natal (HSSREC/00004846/2022).

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