



# Small-Scale Chicken Farmers' Use of Social Media to Access Market Information in Arusha City, Tanzania

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

The aim of this study was to examine the small-scale chicken farmer's use of social media platforms to access market information in Arusha city, Tanzania. Data were collected between June and August 2022 from 260 small-scale chicken farmers (SSCFs). Among these, 130 were Kuku Uchumi and 130 were non-Kuku Uchumi beneficiaries selected using stratified and simple random technique. Both quantitative and qualitative data were collected using questionnaire and key informant interview guide, respectively. Descriptive statistics, chi-square test, and binary logistic regression model were used to analyse quantitative data. On the other hand, qualitative data were transcribed from audio and translated from Kiswahili to English, and extracts were developed. The study found that chicken price, egg tray price, the number of chicken, and egg trays needed in the

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market and chicken market status were the main chicken market information accessed by SSCFs through social media. WhatsApp was reported as the primary social media used by SSCFs to access market information. The findings also, indicate statistically significant differences between Kuku Uchumi and non-Kuku Uchumi beneficiaries in using social media to access market information. The study concludes that using social media to access market information assists SSCFs in finding markets for their chicken and eggs, and recommends to other SSCFs to use social media. Furthermore, Kuku Uchumi's modes of training and mobilization may be advocated by extension agents in other areas

*Keywords: Small-scale chicken farmers; social media use; Kuku Uchumi; access to; market information*

## 1. INTRODUCTION

Access to information is vital for the socioeconomic development of any society. As such, in agriculture, information is one of the prerequisites for agricultural production, hence access to information is a key driver in the growth of agricultural sector in many countries [1]. Similarly, as observed by [2], the prosperity and growth of the agricultural sector will actually depend on smallholder farmers' ability to acquire, access, and use relevant agricultural information. Therefore, farmers' access to information is essential for the better performance of any agricultural endeavour. Access to information is economically crucial to farmers to enable them, among other things, to manage risks and uncertainties regarding agricultural production [3]. Traditionally, farmers have, on the one hand, been depending on informal networks of friends and neighbours, parents, and on the other, formal contacts with Extension Officers and input suppliers to access information on agricultural production [1,4,5]. However, these traditional sources had several limitations, hence, the need for improvement in access to information among farmers [4].

Recent development of Information and Communication Technology (ICT) has helped to overcome many of the limitations of traditional sources farmers have being relied on to access information. This is because ICT has brought about changes and transformed the means of communication due to its cost-effectiveness, timely, and seamless nature of information flow via various media [6]. As a result, small-scale farmers have instant access to local and international market information using technologies such as the Internet and mobile phones [7]. ICT represents a medium through which exchange of marketing information such as prices, produce location, and stock bidding can occur. ICT allows the processing of

knowledge and provides a platform for information dissemination, which can be used in the provision of extension services. ICT has become a powerful tool that connects millions of people globally from the comfort of their homes [8]. As Sivanthanu and Pillai [9] observe, social media is the best way to reach consumers with information. Thus, ICT revolution encompasses new ways of capturing, processing, storing, and displaying information. The revolution is capable of increasing productivity and competitiveness of smallholder farmers [10].

To perform better in their chicken enterprise, chicken farmers need correct and timely information about various aspects of chicken farming. ICTs and social media in particular, offer opportunities for farmers to access and share relevant information about their enterprise. Social media have the ability to reach people everywhere in the comfort of their own homes [11]. Briandana and Dwityas [12] define social media as an online medium where users can communicate and interact with each other for information exchange and networking. Social media are further defined as applications that utilize web technologies and allow users to create and participate in communities through functions such as communicating, interacting, sharing, collaborating, and publishing [13]. Farmers make use of social media for innovative practices and information sharing among others. The most popular social media platforms in agricultural marketing are Facebook, YouTube, WhatsApp, Twitter, and LinkedIn [14].

Literature shows that through social media, Small-Scale Chicken Farmers (SSCFs) could access a variety of information ranging from nutrition to drug administration [15], routine management, general housing information, pest and disease control [16], animal and crop husbandry practices, agricultural inputs, value

addition, and financial institutions [17]. Accordingly, SSCFs need information on chicken breeding and chicken protection from predators to improve chicken farming, [18–20]. Besides, they need market-related information such as market prices for both chicken and their products, demand for chicken and its products in the market, and chicken market outlets [16,19,21,22].

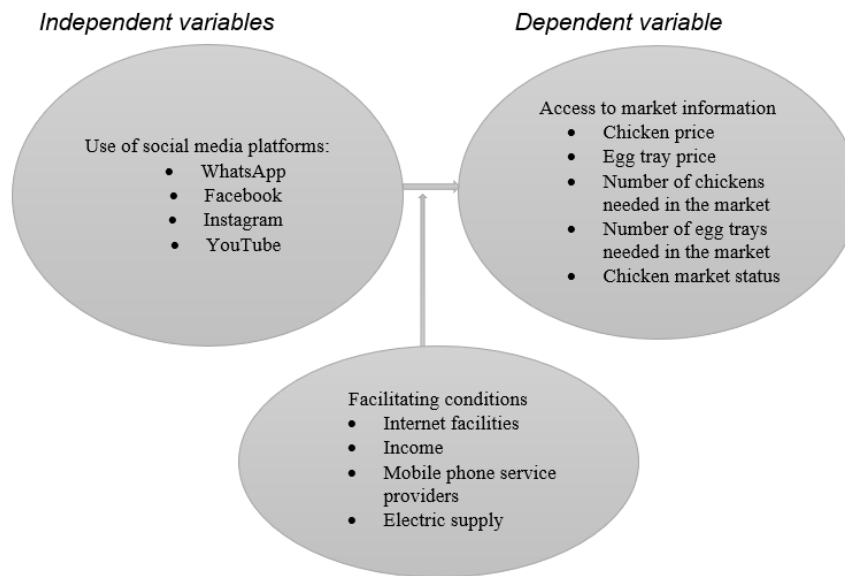
Social media-based interventions have been reported in various parts of the world [23,24]. One such intervention is being implemented by Kuku Uchumi. Kuku Uchumi is a Swahili word that literally means chicken is an income, implying that a chicken farming business can be a source of income. Kuku Uchumi is a non-governmental organization (NGO) operating in Arusha City 2018. More details about the organization can be accessed through YouTube and Facebook under the name Kuku Uchumi. The organization provides extension services to SSCFs and mobilizes them to use social media to access market information. It provides extension services on chicken farming. Both physical visits and through social media contact methods are used to teach farmers on how to use social media to access market information. Organizing SSCFs into social media groups such as WhatsApp and Facebook is the main model used by the organization in order to deliver its services. Through these groups, farmers are linked to the available markets. In addition, through social media groups, SSCFs are able to share updates on any available market information and markets. Ideally, Kuku Uchumi was established following problems associated with market information among SSCFs. It was difficult for the SSCFs to have a direct contact with customers; instead, they used middlemen to sell chicken and their products. Consequently, they received lower price from middlemen, which reduced the profit obtained from their chicken farming business. Thus, Kuku Uchumi came in as an initiative of ensuring that SSCFs access market information, and use the information to sell their chicken and chicken products to the final consumers. The organization also brings SSCFs together through an exhibition known as the "TISA TISA Kuku Exhibition." It is through these exhibitions that farmers meet for the purpose of exchanging ideas on chicken farming and selling their chickens and chicken products, and other services necessary for chicken farming. In this way, farmers could improve their chicken farming activities and eventually secure markets with good prices for their chicken and

chicken products, hence increasing profit and incomes.

Previous studies have assessed various aspects on social marketing, examples include, effectiveness of social media marketing on enhancing restaurant performance in the United States of America [25], marketing strategies using social media in India [26], and the role of social media in agricultural marketing and its scope in India [14]. Others include, social media marketing in Canada [27], the use of social media to improve marketing performance of selected manufacturing firms in Tanzania: Evidence from Coastal Region [28], Utilization of Social Media and Its Implications on the Performance of SMEs in Dodoma City, Tanzania [29] and social media marketing platforms use and effectiveness of marketing communication in the Tanzania's telecommunication industry: evidence from Vodacom Company [30]. However, studies on the use of social media to access market information especially among SSCFs have hardly been reported especially in Tanzania. This study, therefore, examines the type of market information accessed through social media among small-scale chicken farmers in Arusha, Tanzania. This is because the sector is undertaken by small-scale farmers who earn their income from it, thus assuring them of markets and improving their livelihood and wellbeing. It addressed the question; *Does SSCFs' use social media to access market information? In addition, what market information do they access from social media platforms?* The rest of the article is organized as follows: The next section presents the conceptual framework, followed by the description of the methodology adopted for the study. This is followed by the presentation and discussion of the findings, conclusion, y limitation of the study, implication of the study areas and areas for further study presented at the end of the article.

## 1.1 Conceptual Framework

The conceptual framework (CF) for this paper illustrates the relationship between the use of social media platforms and access to market information. The CF indicates that the use of WhatsApp, Facebook, Instagram, and YouTube were considered as independent variables, whereas access to market information (i.e., the price of chicken and eggs, the number of chicken and egg trays needed in the market, and chicken market status as types of market information) was considered as a dependent variable. On the



**Fig. 1. Conceptual framework for the relationship between the use of social media and access to market information**

other hand, facilitating conditions such as availability of internet facility, income that facilitates buying internet bundles, availability of service providers of mobile phone Company, and electric supply are intervening variables. The availability of mobile phone service providers helps SSCFs buy smart phones that can be easily connected to the internet, provided they have the income to do so. Therefore, CF examines whether there is a relationship between the use of social media and access to market information among the SSCFs. Fig. 1 illustrates this relationship.

## 2. METHODOLOGY

This paper is based on a study conducted in Arusha City, Tanzania. A cross-sectional research design was used because it is suitable for gathering data from the selected sample at a single point in time to acquire information on a specific problem [31]. The study covered nine (9) randomly selected out of 25 wards in the City. Arusha City was chosen because of the presence of Kuku Uchumi. SSCFs (both beneficiaries and non-beneficiaries of Kuku Uchumi) in Arusha City formed the study population. In this study, SSCFs were defined as individuals owning between 100 and 1000 chicken.

Purposive, stratified, and simple random sampling techniques were used to select SSCFs, which was a unit of analysis for this study, from

non-beneficiaries of Kuku Uchumi. Prior to the actual fieldwork, the researcher paid a preliminary visit to the study area for familiarization and development of sampling framework in collaboration with Livestock and Ward Executive Officers. During this exercise, and informed on the selection criteria based on the number of chicken kept, that is between 100 and 1000 chicken, 279 non-kuku uchumi beneficiaries were selected. To get appropriate sample for this group, a proportionate formula was used and the required sample was 130. To obtain this, a stratified sampling technique as shown in Table 1 was employed. For Kuku Uchumi beneficiaries, the population was 130 SSCFs, here a census was used hence the total sample for the survey was 260.

The formula was  $\left(\frac{x}{N}\right) * n$

Where;

x stands for the number of small-scale chicken farmers in a ward

N stands for the total number of small-scale chicken farmers in 9 wards

n stands for the required small-scale chicken farmers to be included in the sample

On the other hand, all 130 SSCFs (beneficiaries) served by Kuku Uchumi were selected to be part of the study's sample for comparison purposes. Thus, 260 chicken farmers formed the study sample.

**Table 1. Proportionate sampling of SSCFs in 9 wards (Non-Kuku Uchumi beneficiaries)**

Ward Name	Number of SSCFs	Selected
Elerai	30	14
Lemara	50	23
Moshono	60	28
Murriet	65	30
Olasit	35	16
Sombetini	7	3
Sokoni I	20	9
Unga Limited	6	3
Themi	6	3
<b>Total</b>	<b>279</b>	<b>130</b>

Both quantitative and qualitative data were collected during the study between June and August 2022. Quantitative data were collected using a questionnaire and qualitative data were collected using a Key Informant Interview guide. The questionnaire composed of open-ended questions that required respondents to state the types of market information obtained from social media platforms (WhatsApp, Facebook, Instagram and YouTube), closed-ended questions were used to collect data related to the types of social media platforms used among the four social media sites (WhatsApp, Facebook, Instagram, and YouTube) and the demographic characteristics of the respondents. Key Informant Interview Guide consisted of questions that required narrating types of market information accessed by SSCFs via social media.

By using a content analysis methodology, qualitative data were evaluated [32]. This method involved breaking down the textual data into digestible categories, patterns, themes, and linkages for meaningful interpretation. It also involved examining all components of the data set to clarify concepts and constructions. To validate the themes and patterns, after developing initial themes, every author(s) independently read the script and produced a list of themes; four lists were then matched to produce draft themes. These were then relooked against the literature and study objectives to produce final themes.

Descriptive statistics, a chi-square test, and a binary logistic regression model were used to analyse quantitative data. The model was used because the dependent variable (access to market information) is binary. Content analysis was used to analyse qualitative data transcribed from audio and translated from Kiswahili to English.

The Binary Logistic Regression model is expressed as:

$$\text{Logit } p(x) = \text{Log} \left[ \frac{p(x)}{1 - p(x)} \right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_n X_n + \varepsilon$$

Where;

Logit p(x) = Natural log of the odds of using social media to source market information

P(x) = Probability of accessing market information

1-p(x) = Probability of not accessing market information

α = Constant of the equation

β<sub>1</sub> - β<sub>n</sub> = Coefficients of predictor variables

X<sub>1</sub>, X<sub>2</sub>,.....X<sub>n</sub> are predictor variables entered in the model

e = The precision error, which is 0.05

The predictor variables are:

X<sub>1</sub> = WhatsApp (1 if used, 0 otherwise)

X<sub>2</sub> = Facebook (1 if used, 0 otherwise)

X<sub>3</sub> = Instagram (1 if used, 0 otherwise)

X<sub>4</sub> = YouTube (1 if used, 0 otherwise)

The predicted variable is market information, which includes:

- i. Chicken price
- ii. Egg tray price
- iii. Number of chickens needed in the market
- iv. Number of egg trays needed in the market
- v. Chicken market status (i.e. whether the market is good or bad)

### 3. RESULTS And DISCUSSION

This section comprises findings from all nine wards where the study was conducted. Because there are no differences between the SSCFs, as all have similar characteristics, the findings were presented in a broad sense.

**Table 2. Frequency distribution of respondents according to their demographic characteristics**

Variables (n = 130)	Kuku Uchumi Beneficiaries		Non-Kuku Uchumi Beneficiaries	
	Frequency	Per cent	Frequency	Per cent
<b>Sex</b>				
Male	49	37.7	41	31.5
Female	81	62.3	89	68.5
<b>Age</b>				
20 – 29	11	8.5	16	12.3
30 – 39	49	37.7	43	33.1
40 – 49	35	26.9	40	30.8
50 – 59	21	16.2	24	16.9
60 – 69	13	10.0	9	6.9
70 and above	1	0.8	0	0.0
<b>Marital Status</b>				
Single	9	6.9	15	11.5
Married	118	90.8	101	77.7
Divorced	3	2.3	8	6.2
Separated	0	0.0	6	4.6
<b>Education level</b>				
No formal education	0	0.0	4	3.1
Primary education	39	30.0	48	36.9
Secondary education	57	43.8	50	38.5
Tertiary	34	26.2	28	21.5
<b>Chicken farming experience (years)</b>				
1-10	122	93.8	113	86.9
11-20	8	6.2	14	10.8
21-30	0	0.0	3	2.3
<b>Ownership of ICT Device</b>				
Smartphone	118	90.8	111	85.4
iPad	4	3.1	3	2.3
Laptop	1	0.8	3	2.3
Desktop	0	0.0	0	0.0
Not using any of the ICT devices)	7	5.3	13	10.0

### 3.1 Demographic Characteristics of Respondents

Findings in Table 2 indicate that 89 (68.5%) of the respondents from non-Kuku Uchumi and 81 (62.3%) from Kuku Uchumi beneficiaries were females. This implies that despite the efforts to commercialize chicken production, in many African communities the production of local chicken is still considered a women enterprise. The findings also show that 49 (37.77%) of Kuku Uchumi and 43 (33.1%) of non-Kuku Uchumi beneficiaries were between 30 and 39 years of age. As for marital status, the findings show that 118 (90.8%) of Kuku Uchumi compared to 101 (77.7%) of the non-Kuku Uchumi beneficiaries were married (Table 2).

Based on education, the findings in Table 2 indicate that 57 (43.8%) of Kuku Uchumi compared to 50 (38.5%) of non-Kuku Uchumi beneficiaries attended secondary school. In

terms of chicken farming experience, the majority 122 (93.8%) of the respondents of Kuku Uchumi and 113 (86.9%) of non-Kuku Uchumi beneficiaries) had experience of between 1 and 10 years in chicken farming. The findings further indicated that 118 (90.8%) of the respondents among Kuku Uchumi and 85 per cent of non-Kuku Uchumi beneficiaries owned smartphones.

### 3.2 Social Media Platforms Used by Respondents to Access Market Information

A chi-square test was carried out to determine whether there is a statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries in using social media to access market information. Findings (Table 3) show that there is a statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries ( $P = 0.002^{**}$ ) in the use of

WhatsApp and Facebook to access market information. This implies that many Kuku Uchumi beneficiaries used WhatsApp and Facebook more to access market information than did non-Kuku Uchumi beneficiaries. This may be because Kuku Uchumi beneficiaries were organized into WhatsApp groups in which various types of information is shared unlike the case with their counterparts. This implies that Kuku Uchumi beneficiaries are more exposed to the use of social media in accessing market information. Additionally, the findings in Table 3 show that there is no statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries in the use of Instagram and YouTube to access market information. This implies that the rate of use of Instagram and YouTube among the Kuku Uchumi and non-Kuku Uchumi beneficiaries in accessing market information was almost the same. This makes no difference among the SSCFs, that is, Kuku Uchumi and non-Kuku Uchumi beneficiaries, because neither of the two groups was connected through these social media platforms via groups.

### 3.3 Types of Market Information Accessed from Social Media

A chi-square test was carried out to determine whether there is a statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries in accessing different types of market information from social media. The findings in Table 4 indicate that there is a statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries in accessing chicken price and market status information of chicken using Facebook and WhatsApp ( $P = 0.016^{**}$  and  $0.033^{**}$ , respectively). This implies that many Kuku Uchumi beneficiaries use Facebook and WhatsApp to access prices and information of market status of chicken as compared to non-Kuku Uchumi beneficiaries. The accessed information helps SSCFs choose where they could sell their chicken and chicken products and where they could get a reasonable price for chicken and chicken products. The findings in Table 4 also show that there is no statistically significant difference between Kuku Uchumi and non-Kuku Uchumi beneficiaries in accessing other types of market information such as egg price, number of chickens and egg trays needed in the market. This is because the p-value for accessing the rest of the types of market information is greater than 0.05 (i.e.,  $P \geq 0.05$ ).

This could be because the respondents from both Kuku Uchumi and non-Kuku Uchumi beneficiaries had nearly equal use of social media to access such market information. In other words, both Kuku Uchumi and non-Kuku Uchumi beneficiaries did not use social media to access market information related to egg price, the number of chickens, and egg trays needed in the market. This is because SSCFs knows exactly where to sell their eggs without using social media platforms for advertisement.

### 3.4 Binary Logistic Regression Analysis Results for the types of Market Information

Table 5 shows the results of a binary logistic regression analysis of access to market information obtained from the social media. A binary logistic regression model was used in this analysis, where the use of social media platforms (WhatsApp, Facebook, Instagram, and YouTube) was treated as an independent variable. On the other hand, access to types of market information (chicken and egg prices, the number of chickens needed, and the number of egg trays needed in the market, and chicken market status) was treated as a dependent variable.

The Omnibus (model fit information), Hosmer, and Lemeshow (goodness of fit tests) were carried out to determine goodness of fit of the model. The threshold value for model fit was less than or equal to 0.05, and the goodness of fit test was greater than 0.05 compared to the computed values as indicated in Table 5. These thresholds and computed values revealed that the model was fit for further analysis except for models such as the egg price and the number of egg trays needed in the market. Each piece of market information has its own binary logistic model, thus, Table 5 was designed to have models for all pieces of market information.

Other parameters determined the model classification and summary (Cox & Hell R- and Nagelkerke R-square). The thresholds for these parameters were not less than 50 per cent for model classification and between zero and one for model summary, compared to the computed values as shown in Table 5. Model classification provides us with an indication of how well the model can predict the correct category for each case, whereas the model summary indicates the amount of variation in the dependent variable explained by the model (from a minimum value of 0 to a maximum of approximately 1) [33].

**Table 3. Cross-tabulation of social media users among the respondents**

Respondent's Status	WhatsApp			Facebook			Instagram			YouTube		
	Yes	No	P-Value	Yes	No	P-Value	Yes	No	P-Value	Yes	No	P-Value
<b>Kuku Uchumi Beneficiary</b>	108	22		83	47		27	103		30	100	
<b>Non-Kuku Uchumi Beneficiary</b>	86	44	0.002**	56	74	0.002**	22	108	0.665	27	103	0.796

\*\*Sig.  $P \leq 0.05$

**Table 4. Cross-tabulation of market information from social media among respondents**

Social media platform	Respondent's status	Chicken price			Egg tray price			Number of chickens needed in the market			Number of egg trays needed in the market			Chicken market status		
		Yes	No	P-Value	Yes	No	P-Value	Yes	No	P-value	Yes	No	P-Value	Yes	No	P-Value
<b>WhatsApp</b>	Kuku Uchumi beneficiary	76	54	0.055	64	66	0.418	45	85	0.135	7	123	0.826	34	96	0.033**
	Non-Kuku Uchumi beneficiary	58	72		56	74		59	71		5	125		11	119	
<b>Facebook</b>	Kuku Uchumi beneficiary	60	70	0.016**	53	77	0.071	27	103	0.347	2	128	0.502	25	105	0.740
	Non-Kuku Uchumi beneficiary	38	91		36	94		36	94		5	125		21	109	
<b>Instagram</b>	Kuku Uchumi beneficiary	22	108	0.251	21	109	0.236	10	120	0.857	0	130	0.359	6	124	0.931
	Non-Kuku Uchumi beneficiary	13	117		12	118		12	118		2	128		7	123	
<b>YouTube</b>	Kuku Uchumi beneficiary	19	111	0.917	15	115	0.694	10	120	0.186	2	128	0.843	10	120	0.665
	Non-Kuku Uchumi beneficiary	19	111		19	111		19	111		1	129		13	117	

\*\*Sig.  $P \leq 0.05$



**Table 5. Binary logistic regression analysis result of access to market information from social media**

Use of social Media:	Access to market information									
	Chicken price		Egg Price		Number of Chicken needed in the market		Number of Egg trays needed in the market		Chicken Market status	
	Exp(B)	P-value	Exp(B)	P-value	Exp(B)	P-value	Exp(B)	P-value	Exp(B)	P-value
WhatsApp	15.103	0.000**	1.219	0.526	6.121	0.000**	1.120	0.742	2.982	0.003**
Facebook	0.724	0.280	1.302	0.351	1.103	0.753	1.146	0.665	1.027	0.926
Instagram	0.638	0.220	0.575	0.130	0.800	0.564	1.152	0.708	0.735	0.413
YouTube	1.102	0.775	1.514	0.189	1.239	0.539	1.347	0.382	0.524	0.071
Constant	-2.395	0.000	-0.905	0.002	-2.575	0.000	-1.377	0.000	-1.388	0.000
Note:		P-value		P-value		P-value		P-value		P-value
Omnibus Tests (Model fit information)		0.000**		0.310		0.000**		0.788		0.005**
Hosmer-Lemeshow Test (Goodness of fit test)		0.913		0.662		0.933		0.622		0.515
Model classification		65.80%		65.00%		73.50%		75.40%		66.90%
Model Summary (Cox & Hell R-Nagelkerke R- square)		17.7 – 23.9%		1.8 – 2.5%		7.7 – 11.2%		0.7 – 1.0%		5.5 – 7.7%

\*\*Sig.  $P \leq 0.05$

### 3.4.1 Use of WhatsApp logistic regression analysis-based results

The findings (Table 5) indicate that the probability of using WhatsApp is statistically significant in accessing market information related to chicken price and the number of chickens needed in the market (P-value of 0.000), \*\* and accessing chicken market status information (P-value of 0.003). \*\*With these findings, WhatsApp can be considered the primary social media platform used to obtain various types of market information in the study area. This might be because Kuku Uchumi beneficiaries are organized into WhatsApp groups in which they share or tap whatever market opportunities exist in their groups. Using these groups, they tend to access market information for their chicken and eggs. It also implies that SSCFs in the study area benefit from WhatsApp as the primary social media platform in various ways, such as accessing a reasonable price for their chicken.

The findings (Table 5) also show that the chicken price and the number of chickens needed in the market had an odd ratio of 15.103 and 6.121, respectively, and were statistically significant at  $P = 0.000^{**}$  each. This means that SSCFs who use WhatsApp have 15.103 and 6.121 times greater chances of accessing information about chicken prices and the number of chicken needed in the market, respectively, than is the case with those who do not. Similarly, findings show that chicken market status had an odd ratio of 2.982 and was statistically significant at  $P = 0.003^{**}$  implying using WhatsApp SSCFs can access chicken market status information 2.982 times compared to SSCFs who do not use WhatsApp to access market information. Other odd ratios do not affect any of the market information as they were not statistically significant in using any of the social media platforms (Table 5). This implies that market information associated with the odd ratio could not be accessed by SSCFs through social media.

These findings correspond to the findings in a study by Falola et al. [21] who posit that WhatsApp was widely used by chicken farmers in their chicken management. The authors observed further that farmers now create blogs on their websites, groups on WhatsApp and telegram, and pages on Facebook, Twitter, and Instagram to disseminate market information to their clients. WhatsApp is a handy use of social media and is mostly preferred for accessing information through groups [14]. Additionally,

WhatsApp is the most utilized platform of social media for accessing the information on market prices [16].

During one of the KII, it was revealed that WhatsApp is among the social networking platforms used by many social media users as revealed in the following extract,

*..... WhatsApp is one of the social networking platforms that most of farmers own; it provides a mechanism of knowing if the intended person has received the information shared and who has not received, so that follow up can be made. In addition, it is easy to share links with SSCFs that are not officially enrolled with Kuku Uchumi for them to benefit (KII: Murriet Ward, 06/06/2022).*

This implies that WhatsApp has some degree of usefulness, especially with a feedback loop. This is critical in communication. In addition, according to [30], the app has features to enable users to take photos, create videos, and post them for their customers to access and assess the product conditions virtually. According to Taipale and Farinosi [34], WhatsApp offers a communication approach that can be quite flexible, both time- and place-wise. User feedback is easier to receive, and it is prompt. With WhatsApp, one can communicate instantaneously in multiple ways: one-to-one, one-to-many and many-to-many. It is easier for farmers to communicate with peers, extension professionals, and experts in real time [35].

### 3.4.2 Use of Facebook, Instagram, and YouTube logistic regression analysis-based results

Findings (Table 5) also show that the likelihood of using Facebook, Instagram, and YouTube to obtain market information in the study area was not statistically significant. This is because the corresponding P-values for each of these social media platforms were greater than 0.05. They are, however, used for other purposes, as evidenced by one of the prominent farmers in the KIIs,

*..... I use Instagram for posting chicken and chicken products. I have an Instagram page called "Arusha Kuku Great Vision," where I post pictures of chicken and eggs. I also use YouTube to access various pieces of information with regard to chicken farming. For example, through YouTube, I was able to learn how using cages in chick raising can be useful in preventing the*

chicks from contracting diseases. Through this knowledge, I was able to order my cages, and currently, my chicks are always healthy (KII: Themis Ward, 17/07/2022).

Another KII conducted in Olasit witnessed the use of Facebook, Instagram, and YouTube to access information for chicken farming, as extracted below,

..... I use Facebook, Instagram, and YouTube to access information related to chicken housing and natural herbs to cure chicken diseases. In general, I use social media to access information that could help in solving challenges associated with chicken farming (KII: Olasit Ward, 19/07/2022).

The extracts show that other social media platforms are also used in the chicken farming industry. They provide platforms for posting chicken and eggs for increased visibility, allowing SSCFs to reach customers who are out of reach. SSCFs could also gain access to important information including information on chicken housing and disease control for improving their chicken farming businesses via Facebook, Instagram, and YouTube. This suggests that social media platforms are used for a variety of purposes in the chicken farming industry. Thus, social media could be an excellent platform for Extension Officers to send or upload information to assist SSCFs. The knowledge and skills on chicken farming shared on these platforms appeared to be extremely beneficial in ensuring that farmers improve chicken farming activities.

### 3.4.3 Use of market information accessed from social media

Various respondents from both Kuku Uchumi and non-Kuku Uchumi beneficiaries reported using market information accessed from social media. For example, during KII conducted in Themis ward, one KI remarked,

..... I usually use market information accessed from WhatsApp status, Facebook, and Instagram to expand the available chicken market. I used it to sell chickens and eggs within Arusha, but now, through the use of social media platforms, I have accessed the market for chicken and its products in Dodoma. In this way, I have been taking chickens and egg trays to my customers in Dodoma region. (KII: Themis Ward, 17/07/2022)

In another KII conducted in Murriet Ward, KI commented,

.....I use market information accessed from social media to increase the number of customers for my chicken and its products. These customers were those whom I did not know, but through the use of social media, I knew them. (KII: Murriet Ward, 06/06/2022)

The findings extracted from KII in the two wards provide important evidence that social media platforms expand markets for chicken and their products. This follows the use of market information accessed through social media. Since market information shared by SSCFs reaches everywhere, it implies that SSCFs could access markets for their chicken and their products that were outside their boundaries. In this way, SSCFs could be assured of selling their chicken and products whenever they intended to do so. At the same time, these forums provide a platform where SSCFs could reach a consensus with their customers before they meet for selling and buying. Furthermore, the use of social media breaks up a chain of middlemen who buy products from SSCFs at lower prices and sell them at higher prices. This contributes to a reasonable profit for SSCFs. This is supported by Khanom [36] that the use of social media attract and attach with customers, drive sales through advertising and promotion, measure consumer trends, and deliver and offer customer service and support. The authors further argue that social media facilitate customer communication, making it possible to meld social interactions through e-commerce sites.

## 4. CONCLUSION

The study examined the use of social media platforms by small-scale chicken farmers to access market information in Arusha City-Tanzania. It was revealed that SSCFs use social media platforms to access market information such as prices of chicken and egg tray, the number of chicken and egg trays needed in the market and chicken market status. This informs us that through social media SSCFs could access market information for their chickens and associated products. WhatsApp is widely used by SSCFs to access market information as compared to other social media. Through this platform, SSCFs were organized into groups for information sharing and updates. This means that as more SSCFs get connected, the possibility of accessing market information increases. In comparison, Kuku Uchumi

beneficiaries as opposed to their counterpart (non-Kuku Uchumi beneficiaries) mostly used social media to access market information as a results of training offered by Kuku Uchumi. Additionally, other social media platforms apart from WhatsApp, namely, Facebook, Instagram and YouTube were used to access other types of information (such as general information on chicken management, chickens' diseases and control and housing) for improving chicken farming activities.

Thus, extension agent may promote the use of social media (especially WhatsApp and Facebook, where SSCFs could be organized into groups) to access market information for their chicken and eggs. Mode of training and mobilization activities conducted by Kuku Uchumi (which involves organizing SSCFs into social media groups) may be adopted by extension agent to raise awareness among other SSCFs on using social media in accessing market information, and hence conquering market accessibility challenges.

## 5. LIMITATION OF THE STUDY

The study concentrated in urban areas where facilitating conditions such as availability of electricity and accessibility of mobile phone company providers existed. The situation may be different in rural areas. In addition, the study included SSCFs benefiting from Kuku Uchumi extension services; perhaps results could be different if non-Kuku Uchumi beneficiaries were only involved in the study.

## 6. IMPLICATION OF THE STUDY

The findings of the study imply that SSCFs in Tanzania could benefit from the existence of social media particularly in accessing market information. Apart from market information, SSCFs in Tanzania could access other types of important information related to chicken farming such as general chicken management through social media. In terms of policy implication, the findings imply that Tanzania has a favourable ICT policy, which enables SSCFs to use social media to access market information.

## 7. AREAS FOR FURTHER RESEARCH

A similar study could be conducted in rural areas where Kuku Uchumi is not operating. This will explore the use of social media to access market information among SSCFs in rural areas.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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