Journal of Agricultural Extension
Vol. 28 (2) April 2024
ISSN(e): 24086851; ISSN(Print): 1119944X
Website: https://www.journal.aesonnigeria.org; https://www.ajol.info/index.php/jae
Email: editorinchief@aesonnigeria.org; agricultural.extension.nigeria@gmail.com

Communication Dynamics in the Poultry Value Chain of Commercial Agricultural Development Project in Enugu State, Nigeria

https://dx.doi.org/10.4314/jae.v28i2.5

Udoye, Charles Ekene
Corresponding author
Department of Agricultural Extension
Faculty of Agriculture, University of Nigeria, Nsukka
Email: charles.udoye@gmail.com, charles.udoye@gmail.com
Phone: +2347066077159
https://orcid.org/0000-0003-0868-1624

Dimelu, Mabel Ukamaka
Department of Agricultural Extension
Faculty of Agriculture, University of Nigeria, Nsukka
Email: mabel.dimelu@unn.edu.ng
Phone: +2348143913561
https://orcid.org/0000-0003-2073=1436

Submitted: 1st December, 2023
First Request for Review: 27th January, 2024
Revisions: 27th January,, 12 February , 2nd March 2024
Accepted: 3rd March 2024
Published: 11th April 2024
Cite as: Udoye, C. E and Dimelu, M. U. (2024) Communication Dynamics in the Poultry Value Chain of Commercial Agricultural Development Project in Enugu State, Nigeria. *Journal of agricultural Extension 28*(2) 40-54
Keywords: Poultry, Communication, Fillere approach, Value Chain, CADP
Conflict of interest: Authors declare no potential conflict of interest
Acknowledgement: Authors would like to acknowledge the members of staff of Enugu State CADP for their cooperation during data collection
Authors' contributions:
UCE: (50%): Conceptualization, Methodology, Data collection, Data Analysis
DMU:(50%): Conceptualization, Writing introduction, editing, Supervision

Abstract
The study ascertained communication dynamics among poultry value chain actors of the Commercial Agricultural Development Project in Enugu State, Nigeria. Seventy-one poultry value chain (PVC) actors constituted the sample for the study. This study was based on the Filiere value chain approach, data were analyzed using percentages, mean scores and standard deviation. Results revealed that all (100%) of the service providers used face-to-face channels in communicating with fellow service providers. Producers and processors had strong horizontal communication linkage. Different communication channels (face-to-face, radio, television) were used by the actors to share agricultural information. Service providers had weak horizontal linkage (4 times/year). The government should therefore ensure subsidization of tariff packages for subscription of communication technologies such as mobile phones in order to ensure frequent use by actors for instant communication and timely access to needed agricultural information.

Introduction
The Nigerian agricultural sector has evolved over the years by performing a traditional "supply push" approach with an emphasis on production (Alawode and Oluwatayo, 2019). This has consequently led to weaknesses such as high post-harvest losses, neglect of institutional and policy factors that impact on agricultural innovation (Olufunke, 2020); and weak interaction and communication linkage between economic actors in agricultural innovation systems (Udoye, et al., 2019).

These challenges have posed a major threat to the livelihood sustainability of the rural farmers and the Nigerian economy at large. Successive governments in Nigeria over the years have sponsored several agricultural projects including the Commercial Agricultural Development Project (CADP) with the aid of external interventions geared towards sustainable agricultural development.
The objective of the CADP is to contribute to the government's strategy for poverty reduction by improving the welfare and living conditions of many poor and vulnerable communities in the participating states (Etuk and Ayuk, 2021). Small and medium commercial farmers benefited directly, while many households benefited indirectly through access to farm roads, energy and market opportunities. The project strove to sustainably boost the income of target beneficiaries (participants'), through a value chain development approach with a strong emphasis on stakeholder participation, especially at the Commodity Interest Groups (CIGs) and Commercial Agricultural Development Association (CADA) levels by the formation of strong communication linkages between actors in the chain (Etuk and Ayuk, 2021).

The CADP supported three value chains (VC) per state (Etuk and Ayuk, 2021). The VCs were distributed in the order: Cross River (Oil Palm, Cocoa, and Rice), Enugu (Fruit Trees, Poultry, and Maize), Kaduna (Fruits Trees, Dairy, and Maize), Kano (Rice, Dairy, and Maize) and Lagos (Poultry, Aquaculture, and Rice) (Etuk and Ayuk, 2021). Enugu State has the potential and comparative advantage for poultry production and statistics have shown that it's the major livestock reared (Okoroafor et al., 2020). The Nigerian poultry industry is comprised of approximately 165 million birds, which produced 650,000 MT of eggs and 290,000 MT of poultry meat in 2013 (Rabirou, Kolapo and Abisoye, 2022). According to the source, from a market size perspective, Nigeria's egg production is the largest in Africa (South Africa is the next largest at 540,000 MT of eggs) and it has the 2nd largest chicken population after South Africa's 200 million birds. Despite the statistics, the Nigerian poultry sector is extremely fragmented with most of the chickens raised in backyards or on poultry farms with less than 1,000 birds. Despite these positive aspects, poultry production has not been keeping pace with rapidly increasing domestic consumption due to the persistent increase in population (Hafez and Youssef, 2020); consequently, leading to heightened importation of poultry produce into Nigeria markets (documented and undocumented) through its land borders (Okoroafor et al., 2020). This could be a mere effect of the production approach being adopted by the producers.

Thus, the poultry value chain shows how farm inputs like feed and chicks pass through production, processing, marketing and down to the final consumers. including information on the place each process occurs and, on the people involved (Udoye et. al., 2019). The value chain approach represents a shift from a conventional, technology-dominated dominated and production-oriented approach to a demand and market-oriented approach for agricultural development. It is a system approach (Zhang, 2018); and unlike many other development approaches; value chain development takes a holistic perspective that allows the identification of the interlinked root causes of why end-market opportunities are not being taken advantage of.

The French filière approach also known as the commodity chain approach is a series of interlinked exchanges through which a commodity and its constituents pass from

extraction or harvesting through production to end use (Özalp, 2021). As such, commodity chains serve as conduits through which commercialized produce is ushered from the land, through processing, to their final users, whether rural, urban or international.

Lenis et al. (2020) reiterate that by focusing on the value chain and the links between the actors spread along it, development interventions can better identify common problems among actors in the chain and solutions that generate win-win outcomes. Based on this background, this study seeks to checkmate the value chain approach of CADP and its ability to adhere to the principles of value chain development such as in strengthening linkages and communication amongst actors. Specifically, the study sought to; ascertain the existence of communication linkages among actors in the poultry value chain.

Methodology

The study was carried out in Enugu State, Nigeria. Enugu State is located between latitudes 58° 50′ and 78° 01′ North and longitudes 68° 50′ and 78° 55′ East. The State has seventeen local government areas and six agricultural zones. Actors in the poultry value chain in Enugu State CADP constituted the population for the study. Two out of the five poultry service providers (public (research institutes and Agricultural Development Programs [ADP]) and private sectors) that benefitted from ENSCADP were selected based on their availability. From the list of 85 CIGs in poultry production, 64 producers were randomly selected. From the list of five CIGs in poultry processing made available by the monitoring and evaluation officer of ENSCADP, two poultry processors were randomly selected due to their availability. Three available poultry marketers were randomly selected from the list of eight CIGs. This gave a total of two service providers, sixty-four poultry farmers, two processors and three marketers. A total of seventy-one (71) core value chain actors participated in the study. Data were collected using a structured interview schedule.

The respondents were asked to indicate the existence of communication linkage with other CADP poultry value chain actors (including other public and private support services such as transporters, research banks etc.) and the channels of communication used. Communication channels include face-to-face, mobile phone, radio, internet, etc., while communication channels for horizontal linkage include: producers association, service providers association, processors association etc. The strength of horizontal linkages was determined based on the number of contacts per year where ≤5 times = weak linkage, 6-10 times =strong, ≥11 times = very strong. The strength of vertical linkages was determined based on the number of times of linkage with other actors which were further categorized as follows: 0 = no linkage, 1-10 times= weak linkage, 11-20= strong linkage, 21 and above= very strong linkage. The frequency of use of communication channels in making linkages was ascertained by asking respondents to indicate the average number of times they used each channel in communicating with other actors. Frequency of use was further grouped as 1-3 times= occasionally, 4-6 times= sometimes, 7-9 times= often, and 10 and above = regularly.

Results and Discussion

Existence of Communication Linkages among Actors in the poultry value chain

Service providers.

input dealers' perspective of communication linkages among actors

Table 1 shows that all (100%) of the service providers used face-to-face and mobile phone channels in communicating with fellow service providers, producers, consumers, banks, transporters and cooperative society. On the other hand, all (100%) of the service providers used the internet in communicating with fellow service providers and producers.

This shows that service providers are mostly linked to other actors through face-to-face contact, mobile phone and Internet. Traditionally, the use of face-to-face channel could be very effective as it allows value chain actors to engage in and observe verbal and non-verbal cues that add meaning to discussions (Valamis, 2021) and foster the establishment of trust and transparency. However, it is not cost-effective due to the challenge of time and proximity of actors. Similarly, the tremendous growth in the use and ownership of mobile phones has brought about many changes, both positive and negative, in the nature of social interactions (Kumara, 2020). One of such change is the creation, maintenance and support of long-distance relationships which is essential in linking up and maintaining communication between poultry value chain actors.

Producers' perspective of communication linkages among actors

Table 1 shows that all (100%) the poultry producers had face-to-face communication with fellow poultry producers, service providers and consumers, while 98.4%, 96.9% and 84.4% had face-to-face communication with cooperative society, marketers/traders and transporters, respectively. Similarly, the majority (98.4%) used mobile phones to communicate with fellow poultry producers, service providers, and consumers, while 96.9% used mobile phones in communicating with cooperative society. On the other hand, radio, TV and print media were not popular channels of communication among the actors. Therefore, the most popular channels of interaction were face-to-face contacts and mobile phones. According to Indeed Editorial Team, face-to-face meetings are the most effective way to meet new clients to sell the business and successfully build and maintain long-term relationships (Indeed Editorial Team, 2021). On another hand, the use of mobile phones by the poultry producers is cost-effective and efficient for sharing information among actors.

Processors perspective of communication linkages among actors

Data in 1 show that all (100%) the processors used face-to-face and mobile phone channels in communicating with fellow processors, input dealers, producers, marketers/traders, consumers, transporters and cooperative society. The processors are linked with other actors in the chain mostly through the use of face-to-face, mobile phones and the internet. Other channels like radio, television and print media are not used. They were not linked to some support organizations such as NGOs, research institutes and others.

According to Indeed Editorial Team (2021) face-to-face meetings aid the decision-making process, requiring the kind of give-and-take typical of complex decisions and

sales that poultry processors are engaged. Moreover, face-to-face meetings build stronger, more meaningful relationships, the ability to “read” another person and greater social interaction are best for persuasion, leadership, engagement and accountability. In the same vein, the use of modern information communication technology such as mobile phones the and internet facilitates timely communication among actors. Mobile phones also permit poultry processors (customers) to interact more directly with actors such as banks (checking balances and initiating transactions) from wherever they are. Furthermore, using mobile phones as a means to gain access to devices offers the customers a level of immediacy, convenience and control in their enterprise.

Marketers/traders' perspective of communication linkages among actors

Data in Table 1 show that all (100%) the poultry marketers indicated using face-to-face and mobile phone channels in communicating with fellow marketers, processors, producers, consumers, transporters and cooperative society. The use of face-to-face and mobile is the popular channel of communication with actors in the chain. The use of face-to-face channels by poultry marketers in linking with actors could create trust and offer a greater possibility of influencing people and changing their way of thinking. This results in a better understanding of issues of common interest and sharing of ideas. Similarly, the use of information communication technologies such as mobile phones and the internet in the marketing of poultry products improves the quality and the number of products accessed and delivered to consumers and causes better innovative, creative and cognitive thinking, higher productivity and efficiency in poultry production and marketing (Lelethu & Lwandiso, 2022).

Table 1: Existence of communication linkages among actors

Links	Face to Face %				Mobile phone %				Radio %	TV %	Internet %				Print edia %
	CADP														
	SP_s	P_s1	P_s2	M_s	SP_s	P_s1	P_s2	M_s	P_s1	P_s1	SP_s	P_s1	P_s2	M_s	P_s1
Service providers	100	100	100	66.7	100	98.4	100	100	14.1	10.9	100	9.4	50.0	0.0	7.8
Producers	100	100	100	100	100	98.4	100	66.7	10.9	10.9	100	4.7	50.0	33.3	7.8
processors	50	40.6	100	100	50	39.1	100	100	9.4	9.4	0.0	0.0	50.0	33.3	7.8
Marketers	50	96.9	100	100	50	95.3	100	100	10.9	10.9	0.0	0.0	0.0	33.3	7.8
Consumers	100	100	100	100	100	98.4	100	100	10.9	10.9	0.0	6.3	0.0	0.0	7.8
Banks	100	42.2	50.0	66.7	100	28.1	50.0	66.7	7.8	7.8	0.0	1.6	0.0	0.0	7.8
Transporters	100	84.4	100	100	100	82.8	100	100	0.0	0.0	0.0	1.6	0.0	0.0	0.0
Money lenders	0.0	6.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Research institutions	0.0	6.3	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooperative societies	100	98.4	100	100	100	96.9	100	100	7.8	7.8	0.0	1.6	0.0	0.0	7.8
Extension	0.0	17.2	0.0	0.0	0.0	15.6	0.0	0.0	9.4	9.4	0.0	0.0	0.0	0.0	7.8
NGO_s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exporters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*Multiple responses, SP_s = Service Providers, P_s1=Producers, P_s2=Processors, M_s= Marketers

Frequency of Use of Communication Channels for Linkages

Service providers/input dealers' perspective of frequency of use of communication channels for linkage

Table 2 shows that service providers used face-to-face channels regularly in communicating with producers (30 times) and consumers (30 times). On the other hand, the mobile phone was regularly used in communicating with producers (18 times) while the internet was regularly used in communicating with fellow service providers (12 times). This shows that the service providers regularly communicated with other actors using face-to-face communication channels, mobile phones and internet. This could be attributed to the availability, access and credibility of information from these sources. However, it is important to note that conventional face-to-face was more frequently used because of the zero cost in its use compared to the use of modern technologies (mobile phones and internet) (Stieger, et al, 2023).

Producers' perspective of the frequency of use of communication channels for linkage

Table 2 shows that producers used face-to-face channels regularly in communicating with consumers (41 times) and fellow producers (30 times) On the other hand, they used mobile phones regularly in communicating with consumers (27 times), while radio was sometimes used in communicating with fellow producers, service providers, processors, cooperative society and extension (4 times each). The Table also shows that they used the internet regularly in communicating with banks (20 times) and consumers (16 times) while print media was regularly used in communicating with input dealers (10 times).

The results similarly show that the poultry producers used the face to face ?? communication channel, mobile phone, internet and print media in sharing information with other actors. The regularity in the use of some of the communication channels suggests strong linkage among the actors which could foster learning, promote the level of innovativeness, capacity building along the chain and subsequently, profit maximization in the enterprise. This makes poultry producers capable of coping with the more complex, increasingly knowledge-based production needed to participate in highly competitive globalized agricultural markets.

Processors Perspective on Frequency of Use of Communication Channels for Linkage

Table 2 shows that processors used face-to-face channels regularly in communicating with consumers (115 times), fellow processors (45 times) and producers (35 times). Similarly, they used mobile phones regularly in communicating with consumers (158 times) and producers (53 times) while the internet was also used regularly in communicating with fellow processors (20 times). This shows that the majority of poultry processors established linkage through face-to-face channels, the use of mobile phones and the Internet. It suggests strong and functional interaction with relevant actors in the processing of poultry products. This would ensure access to useful processing and marketing information, technological innovations, advisory services, skills and credit which enhances their performance in the value chain. According to Tomasz and Aleksandra (2022), information is a

significant element in the development of any enterprise and has over time shaped the way in which agricultural value chain actors (processors) think and act.

Marketers/traders' perspective of frequency of use of communication channels for linkage

Data in Table 2 shows that marketers used face-to-face communication channels regularly in communicating with consumers (55 times) and fellow marketers (37 times). Also, they used mobile phones ‘regularly’ in communicating with consumers (87 times), transporters (55 times), fellow marketers (52 times) and producers (40 times), while the internet was used ‘regularly’ in communicating with fellow marketers.

Similarly, this shows that the marketers used face-to-face communication channels, mobile phones and the internet in communicating with actors in the value chain suggesting that the use of such ICTs ensures access to information needed at the right time. However, their lack of linkage with research institutions, extension agents and exporters show a lack of cooperation at the global level.

Table 2: Frequency of use of communication channels for linkages

Links	Face to Face $\bar{x}$				Mobile phone $\bar{x}$				Radio $\bar{x}$	TV $\bar{x}$	Internet $\bar{x}$				Print Media $\bar{x}$
	CADP SP_s	P_s1	P_s2	M_s	SP_s	P_s1	P_s2	M_s	P_s1	P_s1	SP_s	P_s1	P_s2	M_s	P_s1
Service providers	13	12.7	6.0	30.0	9.0	9.7	6.5	30.0	3.6	3.3	12.0	5.0	1.0		3.0
Producers	30.0	30.3	35.0	35.0	18	16.8	52.5	40.0	3.8	4.0	7.0	8.8	5.0	4.0	6.0
processors	9.0	4.3	45.0	16.7	5.0	4.2	35.0	35.0	3.8	3.8	0.0	0.0	20.0	3.0	3.0
Marketers	5.0	13.1	18.5	36.7	8.0	9.7	9.0	52.0	3.1	2.7	0.0	0.0	0.0	30.0	3.0
Consumers	30.0	41.3	115	55.0	8.0	27.2	157.5	86.7	2.9	3.6	0.0	16.3	0.0	0.0	2.0
Banks	12.0	3.3	5.0	1.5	2.0	2.8	2.0	3.0	2.0	4.0	0.0	20.0	0.0	0.0	2.0
Transporters	18	12.4	7.0	6.0	13.0	8.4	6.5	55.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
Money lenders	0.0	15.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Research institutions	0.0	2.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooperative societies	1.0	6.0	1.0	1.0	4.0	8.7	3.5	7.7	5.0	4.0	0.0	10.0	0.0	0.0	3.0

***Regularly= ≥10 times, often=7-9 times, sometimes=4-6times, ocassionally=1-3times**

SP_s = Service Providers, P_s1=Producers, P_s2=Processors, M_s= Marketers

Existence and strength of horizontal and vertical communication linkages

Existence and strength of horizontal communication linkages

Data in Table 3 shows the percentage distribution of the actors based on horizontal linkage. From the Table, 50% of service providers belonged to input dealers association and they held meetings ≤5 times per year. The mean number of times of linkage was 4 times per year. This shows a weak horizontal linkage for the service providers. It is pertinent to note that 50% of service providers did not belong to any group probably because there was no formal association of input dealers in the area. Also, the reason for them not belonging to a formal association may be because it is not a legal requirement for their business.

On the other hand, the majority (73.4%) of poultry producers did not belong to the producers' association, while 26.6% belonged to the association (Table 3). Amongst the producers who belonged to the producers' association, the majority (52.9%) indicated that they held meetings 6-10 times per year, 35.3% held ≤5 times, and 11.8% held 11 times or more per year. The mean number of times of formal linkage was 6 times per year. This shows a strong horizontal linkage among poultry producers.

On the other hand, all (100%) the processors belonged to processors association, indicating a stronger alliance and system, and invariably greater capability and resilience in a competitive world. Amongst the members of the association, 50% indicated that they held meetings ≤5 times per year, while another 50% held 11 times or more per year. The mean number of times of formal linkage was 8 times per year. This shows a strong horizontal linkage among poultry processors.

Further, the Table showed that the majority (66.7%) of marketers belonged to marketers' associations. Whereas, 66.7% indicated that they held meetings ≤5 times. The mean number of times of formal linkage was 4 times per year. This shows a weak horizontal linkage among poultry marketers. The membership association recorded could be due to the benefits received such as access to market information on price, enhanced bargaining power and subsequently increased income from the enterprise

The existence of weak horizontal linkage amongst poultry service providers and markers in the poultry value chain could imply that although they communicate with each other, they are unwilling to work as a team to encourage shared decision-making and establishment of mutual trust among the actors which hinders their performance in the chain.

Table 3: Existence and strength of horizontal communication linkages

Membership of association	**Service providers n=1**		**Producers n=17**		**Processors n=2**		**Marketers n=2**	
	% (n=2)	$\bar{x}$	**%(n=64)**	$\bar{x}$	**% (n=2)**	$\bar{x}$	**% (n=2)**	$\bar{x}$
Yes	50		26.6		100		66.7	
***Number of times of horizontal linkages per year**								
≤5	50	**4**	35.3	**6.24**	50	**8**	66.7	**4**
6-10	-		52.9		-			
11 and above	-		11.8		50			

***≤5 times= weak linkage, 6-10 times=strong, ≥11 times= very strong**

Existence of vertical communication linkages

Table 4 shows that all (100%) the service providers indicated linkages with producers, consumers, bank and cooperative societies, while 50.0% had linkage with processors and marketers respectively. This suggests that the service providers have the link for service delivery and possible access to support services like credit. None of the service providers indicated having linkage with exporters, research, local money lenders and NGOs.

Data in Table 4 show that all (100%) the producers had a linkage with cooperative society, while 98.4%, 96.9% and 95.3% had a linkage with service providers, consumers and marketers, respectively. It could be inferred that the producers are highly linked with core poultry value chain actors, which may enhance access to relevant information, advisory services, technologies, market information and commercialization of production. None of the producers indicated a linkage with exporters and NGOs.

Entries in Table 4 show that all (100%) of the processors indicated having a linkage with service providers, producers, marketers, consumers and cooperative society, while 50% had a linkage with banks. It can be deduced that the poultry processors may be technologically equipped and trust the information sourced from other actors in the chain. None of the processors indicated a linkage with exporters, research, local money lenders and NGOs.

Table 4 shows that all (100%) the marketers indicated having a linkage with producers, processors and cooperative society, while 66.7% each had a linkage with service providers and banks. It can be inferred from the findings that marketers have a linkage between for supply and sales of products. None of the marketers indicated a linkage with exporters, research institutes, local money lenders and NGOs.

Table 4: Existence of vertical communication linkages

Actors	Service providers		Producers		Processors		Marketers	
	% yes	Mean	% yes	Mean	% yes	Mean	% yes	Mean
Service providers	-	-	98.4	32.7	100.0	5.5	66.7	225.0
Farmers	100	35.0	-	-	100.0	115.0	100	316.0
Processors	50.0	30.0	42.2	13.2	-	-	100	186.7
Marketers	50.0	70.0	95.3	34.6	100.0	37.5	-	-
Consumers	100.0	45.0	96.9	61.0	100.0	330.0	100	380.0
Exporters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Research	0.0	0.0	4.7	3.7	0.0	0.0	0.0	0.0
Bank	100.0	25.0	40.6	17.3	50.0	60.0	66.7	13.5
Cooperative	100.0	9.5	100	9.4	100.0	12.0	100	12.0
Local money lenders	0.0	0.0	7.8	3.2	0.0	0.0	0.0	0.0
NGOs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

***Multiple responses**

Strength of vertical communication linkages

Table 5 shows that the service providers had very strong linkage with producers (35 times), processors (30 times) and marketers (70 times). The producers had a very strong linkage with service providers (33 times) and marketers (35 times), while they had a strong linkage with processors (13 times). It can be inferred from the findings that poultry producers may always have the needed services (e.g. veterinary services) and agro-inputs at their disposal for profitable production. This also suggests that a market for the sales of farm produce could be readily available for the poultry producers since they have a very strong linkage with marketers who have direct contact with consumers who rely on poultry products as their major source of protein.

Data in Table 5 show that the processors had very strong linkage with producers (115 times) and marketers (38 times), while they had weak linkage with service providers (6 times). On the other hand, the marketers had a very strong linkage with service providers (225 times), producers (316 times) and processors (187 times). It can be inferred that the marketers were provided with technologies for egg and bird transportation which drastically reduces losses incurred during transportation. Strong linkage among poultry value chain actors shows a high prospect for growth and better performance of the value chain. It means cooperate system learning and capacity building through information flow and interaction, value addition, innovativeness and income distribution along the chain.

The existence of very strong vertical communication linkage among different actors (service provider/producers, processors/producers and marketers'/service providers) could suggest that the actors have created a positive understanding with various stakeholders in the value chain which can help in building effective long-term relationships which brings a range of benefits such as easy access to funds.

Table 5: Strength of vertical communication linkages

***0 = no linkage, 1-10 times= weak linkage, 11-20= strong linkage, 21 and above= very strong linkage**

***Developed from Table 4**

Actors	Service providers	Producers	Processors	Marketers
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
Service providers	-	33	6	225
Producers	35	-	115	316
Processors	30	13	-	187
Marketers	70	35	38	-

Conclusion and Recommendations

Actors (Service providers, producers and processors) in the poultry value chain model of the Commercial Agricultural Development Project had very strong vertical communication linkages with marketers in the chain while service providers had weak linkage with processors. Also, the service providers and marketers had weak horizontal (membership of association) linkage. Therefore, development intervention programmes should concentrate on fashioning out policies and strategies geared towards the sensitization of service providers, processors and marketers on the need for collaborations with stakeholders across the chain and along association lines so that they could easily have access to needed productive information which could improve their economic value at the global value chain.

References

Alawode O. O., Oluwatayo I. B. (2019) Development outcomes of Fadama III among fish farmers in Nigeria: evidence from Lagos State. Eval Progr Plan 75(April 2018):10–19Asian Development Bank (ADB) (2021). Global Value Chain Development Report 2021: Beyond Production. Publication | **November 2021** D**oi**: **http://dx.doi.org/10.22617/tCS210400-2**

Donovan, J., Cunha, M., Franzel, S., Gyau, A. & Mithöfer, D. (2013). *Guides for Value Chain Development – A Comparative Review*, CTA & World Agroforestry Centre,Wageningen, The Netherlands.

Etuk, E. A. & Ayuk, J. O. (2021). Agricultural commercialization, poverty reduction and pro-poor growth: evidence from commercial agricultural development project in Nigeria. *Heliyon* 7 (5) 1-11 https://doi.org/10.1016/j.heliyon.2021.e06818

Hafez M. H. and Youssef A. A. (2020). Challenges to the Poultry Industry: Current Perspectives and Strategic Future After the COVID-19 Outbreak. *Front. Vet. Sci.* 7:516. doi: 10.3389/fvets.2020.00516

Indeed Editorial Team (2021). Face-to-face Meetings: Nine benefits and why they're important. Retrieved on 28/12/2022 on https://www.indeed.com/career-advice/career-development/face-to-face-meetings

Kumara, S. R. (2020). Mobiles have changed the way we communicate. *International Journal of English Research* Vol 6 (6); 40-43

Lelethu Mdoda & Lwandiso Mdiya (2022) Factors affecting the using information and communication technologies (ICTs) by livestock farmers in the Eastern Cape province, *Cogent Social Sciences*, 8:1, DOI: 10.1080/23311886.2022.2026017

Lenis S. O. L. (2020) A scoping review of market links between value chain actors and small-scale producers in developing regions. *Nature sustainability* 3 (10) 1-10 DOI:10.1038/s41893-020-00621-2

Okoroafor, O. N., Ezema, W. S., Animoke, P. C., Okosi, R. I., Nwanta, J. A., Anene, B. M., Okoye, J. O. A. and Ani, A. O (2020) Constraints and prospects of turkey production in Enugu state south-eastern Nigeria. *Nig. J. Anim. Prod*. 2020, 47(5): 142 – 155 DOI:10.51791/njap.v47i5.1328

Olufunke T. A. (2020). Market-based approaches for postharvest loss reduction. Unpublished PhD thesis in International Affairs, Science and Technology Sam Nunn School of International Affairs. Georgia Institute of Technology.

Özalp, B. (2021). Neoliberalism and Global Commodity-Value Chain. Journal of Social and Humanities Sciences Research, 8(75), 2577-2584. http://dx.doi.org/10.26450/jshsr.2732

Rabirou K., Kolapo A. and Abisoye L. L. (2022) Competitiveness of broiler production in Nigeria: A policy analysis matrix approach *Heliyon* 8 1-18 https://doi.org/10.1016/j.heliyon.2022.e09298

Stieger, S., Lewetz, D. & Willinger, D. (2023) Face-to-face more important than digital communication for mental health during the pandemic. *Sci Rep* **13**, 8022 (2023). https://doi.org/10.1038/s41598-023-34957-4

Tomasz, L. and Aleksandra P. (2022). Information and knowledge as factors contributing to sustainable entrepreneurship. *Procedia Computer Science* 207 4017–4026 10.1016/j.procs.2022.09.464

Udoye, C. E., Dimelu, M. U., Anugwa, I. Q., Ozioko, R. I. and Azubuike, F. C. (2019). Actors' satisfaction with poultry value chain approach of the Commercial Agricultural Development Project in Enugu State, Nigeria. *Journal of Agricultural Extension 23 (4)*: 157-174 https://dx.doi.org/10.4314/jae.v23i4.17.

Valamis group (2021) Types of communication. Retrieved on 28/12/2022 https://www.valamis.com/hub/types-of-communication

Zhang, W., Gowdy, J., Bassi, A.M., Santamaria, M., DeClerck, F., Adegboyega, A., Andersson, G.K.S., Augustyn, A.M., Bawden, R., Bell, A., Darknhofer, I., Dearing, J., Dyke, J., Failler, P., Galetto, L., Hernández, C.C., Johnson, P., Jones, S.K., Kleppel, G., Komarek, A.M., Latawiec, A., Mateus, R., McVittie, A., Ortega, E., Phelps, D., Ringler, C., Sangha, K.K., Schaafsma, M., Scherr, S., Hossain, M.S., Thorn, J.P.R., Tyack, N., Vaessen, T., Viglizzo, E., Walker, D., Willemen, L. and Wood, S.L.R. (2018). Systems thinking: an approach for understanding 'eco-agri-food systems'. In TEEB for Agriculture & Food: Scientific and Economic Foundations. Geneva: UN Environment. Chapter 2, 17-55 https://www.researchgate.net/publication/33138570