Communication Constraint in Information Dissemination along Moringa Supply Chain in Kwara State, Nigeria.

Article · January 2016

CITATION
1

READS
177

5 authors, including:

Opeyemi Eyitayo Ayinde
University of Ilorin
70 PUBLICATIONS **473** CITATIONS
SEE PROFILE

Ifedotun Aina
University of Cape Town
7 PUBLICATIONS **20** CITATIONS
SEE PROFILE

Jubril Animashaun
University of Ilorin
35 PUBLICATIONS **57** CITATIONS
SEE PROFILE

Mercy Funke Salami
University of Ilorin
22 PUBLICATIONS **18** CITATIONS
SEE PROFILE

ISSN: 2437-1955; 2016; Vol. 3:38-46

Communication Constraint in Information Dissemination along Moringa Supply Chain in Kwara State, Nigeria

Ayinde O. E., Aina I. V., Animashaun J. O., Salami M. F. and Ojo O. E.

Department of Agricultural Economics and Farm Management, Faculty of Agriculture, University of Ilorin, Nigeria
*Corresponding author's email address: ainaifedotun@gmail.com

Abstract
Moringa oleifera is a rich plant source of Vitamins, minerals, phytonutrients and antioxidants. The plant has a range of uses from food security, medicinal purposes, economic empowerment to water purification. Despite the enormous potentials of the plant, research on its use and commercialization in Nigeria is still fraught with challenges that plausibly border on a widening communication gap among the relevant stakeholders in the supply chain. Given this, the current study examines the level of communication and constraints encountered by stakeholders along the supply chain in Ilorin Metropolis, Nigeria. Descriptive statistics was used to analyse the level of communication that exists among agents in the Moringa supply chain, and chi-square was used to examine the constraints encountered by stakeholders along the supply chain. It was stressed that there is the need to popularise the plant for cultivation among farmers using on-farm adaptive research, there is also a need for different institutes and research bodies to involve themselves in more productive research to boost awareness of the plant.

***Keywords**: Moringa oleifera, Supply Chain and Information dissemination.*

Introduction

Moringa plant is a rich ethnomedicinal and nutraceutical plant whose cultivation and consumption hold prospects for sustainable livelihoods, food and nutrition security and enhanced income (Palada and Chang 2003**)**. The plant is grown for food because it is an exceptionally nutritious vegetable tree with varieties of potential value (Ozumba, 2011). The leaves are significant sources of beta-carotene, Vitamin C, protein, iron, and potassium (Kasolo et al., 2010). Onyekwelu and Olabiwonnu (2010) reported that with the seed oil content of between 35 and 47% in Moringa.

The nutritional and economic importance of Moringa as a source of food and a potential tool for economic empowerment cannot be overemphasised. Indeed, the usefulness of the plant is more apparent in rural areas in developing countries where households are more susceptible to income shocks arising from declining crop yields and are vulnerable to food insecurity and micronutrient malnutrition. Further uses of Moringa that could be highly relevant in these rural communities include the treatment of anaemia, colds, fevers, cataract issues as well as night blindness, oedema, tuberculosis as well as calcium deficiencies. In the Philippines for instance, Moringa seeds are

boiled like beans and used for the treatment of diabetes, and the leaves are used for their antiseptic characteristics. The bark is mixed with coconut oil and wrapped around fractures to treat them; women are given Moringa post-partum as the boiled leaves are used to induce lactation as well as to prevent anaemia. The Moringa seeds also have potentials uses in water purification as a primary coagulant and in conjunctive use with alum in treating low turbidity waters in Nigeria (Muyibi and Okuofu 1995).

Despite the enormous usefulness and the economic potentials of the Moringa plant, research on the use and the economic opportunities of its commercialization in Nigeria is limited (Adesina et al. 2013, Animashaun 2013). A possible cause of this could be the lack of effective communication among Moringa researchers, farmers and other actors involved in the Moringa supply chain and a lack of consensus among relevant stakeholder on the areas of research priority that needs to be addressed in order to achieve the full economic and social potential of the plant. Hence, it is important to identify and manage the needs and expectations of all stakeholders in order for a successfully realising the full potentials of the plant.

Also, research efforts addressing the challenges of the Moringa plant are led currently by many research institutions in developed countries and international research centres. There is little evidence in the literature to indicate that some element of decision-making processes and exchange of expectations and needs among relevant stakeholders in developing countries. Understanding the views of various stakeholders is, therefore, an important research direction in this regard.

The challenge of constraints in information and communication systems gives rise to challenges in policy formulation or implementation, capacity building in agribusiness, supply chain linkage, market linkage and research. There is a need for coordinated and effective linkage between all stakeholders (producers, wholesalers, retailers, processor, farmers and researchers) which will lead to an improvement in awareness of the use of the Moringa products. It is important to address the stakeholders' processes, knowledge integration and collaborative learning in the *Moringa oleifera* supply chain because this determines the consistent flow of supply to meet the demand for enhanced productivity, competitive advantage and optimal development of the product. Platform for stakeholders (Moringa researcher, Moringa processor and Moringa farmers) are neither strong nor available where they can link together and share knowledge and new information for the development of Moringa product and foster relationship to benefit each other and sustainably. It is the mentioned gaps that this study seeks to analyse the level of communication that exist among agents in the Moringa supply chain and examine the constraints encountered by stakeholders along the supply chain in Ilorin Metropolis, Nigeria.

Methodology

Scope of Study

The study was conducted in Kwara state, which is the north-central geopolitical zone of Nigeria within latitudes 70°45' and 90°30'N and longitudes 40°30'and 60°25'E. The State is made up of 16 local government areas, and it has

land area of about 32, 500 square kilometres and a population of about 2.37 million people (NBS, 2012). The state has two main climatic seasons, the dry and wet seasons with an intervening cold and dry harmattan period usually experienced from December to January. The natural vegetation varies from guinea savanna in the extreme north with a Fadama belt along the river Niger, and a derived savanna is slightly merging into the rain forest belt in the southern and eastern part of the state. Annual rainfall ranges from 1000-1500mm, while maximum average temperature ranges between 30^{o} c and 35^{o} c. The state engages itself in conducting several educational and research institutes committed to the development of the Moringa crop. One of such educational institutes that are involved in the development of the Moringa crop both for consumption and research purposes is the University of Ilorin which is located in the state's administrative headquarters.

Sampling Technique

The study utilised 2 stage sampling technique.

1st Stage: In the first stage, a one-stage cluster sampling of all the cluster groups which includes the farmers, processors and research institutes involved in the Moringa value chain development, in the study area. Essentailly, there was cluster of two groups, Group One consist of Moringa researchers (research institutes, polytechnic researchers, universities researchers, farmer groups), Group Two consist of Moringa farmers and Moringa processors.

2nd Stage: proportionate to sample random size sampling of individuals in each cluster group in the study area. The totals of one hundred and seventeen (Group two) Moringa, farmer/processor respondents, were sampled, and a total of sixty- two researchers (group one) were sampled in the study area.

Result and Discussion

Socio-economic characteristics of the respondents

This section presents the socio-economic characteristics of the respondent. It describes how the household socio-economic features.

The study revealed that 54.7% of respondent were male and 23.3% female, 0.7% of the respondents are within the age of $\leq$ 24, 54% were in the range of 29 – 38, 26.1% were between 39 – 48 and 13.5% between and 49 – 58. Also, 6.7% were single, 62.7% married, 4.7% divorced and 4.0% widowed. The modal class of level of education is tertiary education. This implies that 58.0% of the respondent attends tertiary institution, 15.3% have post secondary education, 4.0% have secondary education and 0.7% has primary education. It was observed that 30.7% of the respondent work has a farmer, 24.7% civil servant, 22.8% trading and 26.7% others. It was observed that the respondent does not base their work on Moringa production. It was observed that 67.4% of the respondent has the range of 1 – 9 years of experience while 10.7% account for 10 – 20 years of experience. It was observed that the income of the respondent which is not only on Moringa production but they also engaged in other activities as a source of revenue. 29.2% were in the range of ₦ 20,000 –N100, 000, 46.4 of the respondent income range N110, 000 – N400, 000 while 4% were N410, 000 – N500, 000 monthly.

Table 1: Socio-Economic Characteristics of Respondents (farmer/processor)

Variables	Frequency	Percentage (%)
Sex		
Male	82	54.7
Female	35	23.3
Age		
≤ 24	1	0.7
29 – 38	12	54
39 – 48	45	26.1
49 – 58	20	13.5
Marital Status		
Single	10	6.7
Married	94	62.7
Divorce	7	4.7
Widowed	6	4.0
Educational Status		
Primary	1	0.7
Secondary education	6	4.0
Post secondary	23	15.3
Tertiary education	87	58.0
Livelihood Activities		
Farming	46	30.7
Civil servant	37	24.7
Trading	33	22.0
Other	40	26.7
Income		
20,000 – 100,000	41	27.2
110,000 – 400,000	70	46.4
410,000 – 500,000	6	4
Year Of Experience		
1 – 9	101	67.4
10 – 20	16	10.7

Source: field survey, 2014

The study revealed that 67.7% of respondent were male, and 32.3% female, 25.6% of the respondents are within the age of 29 - 40, 66% were in the range of 41 – 60, 8% were ≥ 60. Also, 4.8% were single, 93.5% married, and 1.6% widowed. The modal class of level of education is PhD (doctoral degree). This implies that 54.8% of the respondents were PhD, 33.9% were M.sc, 8.1% posted doctorate and 3.2% posted secondary. It was observed that 51.6% of the respondent has the range of 1 – 10 years of experience, 37.1% account for 11 – 20 years of experience while 11.2% accounts for 21 – 40 years of experience. It was also observed that university has the largest respondents though it involves two, 38% were a university, 12.9% were farmer group, college of education and polytechnic were 6.5% respectively while 8% were researcher Institute.

Table 2: Socio-Economic Characteristics of respondent (Researcher)

Variables	Frequency	Percentage (%)
Sex		
Male	42	67.7
Female	20	32.3
Age		
29 – 40	16	25.6
41 – 60	41	66
≥60	5	8
Marital status		
Single	3	4.8
Married	58	93.5
Widowed	1	1.6
Educational status		
Post Secondary	2	3.2
M.Sc	21	33.9
Ph.D	34	54.8
Post Doct	5	8.1
Kind of Affiliation		
Farmer group	8	12.9
College of Education	4	6.5
Polytechnic	4	6.5
Research Institute	8	12.9
University	38	61.3
Years of experience		
1 – 10	32	51.6
11 – 20	23	37.1
21 – 40	7	11.2

Source: field survey, 2014

Communication among Agents in the Moringa Supply Chain

The descriptive analysis as shown the percentage of communication that exists between Moringa farmer and actors engaged in the Moringa supply chain. As shown in Table 7, the strength of communication explains how farmer has more access to the wholesaler and researcher more than other actors. This could be as a result of the fact that Moringa researchers are interested in finding more about Moringa so as to encourage farmers to improve and find solution to the challenges according to (Radovich, 2010) unimproved crop varieties, inadequate Moringa processing facilities that results in huge post-harvest loss and end markets' sophisticated requirements that reverberate down the chain pose major challenges. Furthermore, it was also found to have a significant level of communication at ($p = 0.01$).

As revealed in the chart, a large percentage of the Moringa farmers have reliable communication with the wholesalers and researchers, while some of the respondent communication with the distributor, processor, marketer and retailer is less. Unique knowledge

platform to share the latest information about Moringa can only be done through the means of communication, and this is why it cannot be overemphasis so as to achieve the aim of knowledge integration. The value chain is not organised well yet and still depends very much on NGOs that produce and sell the powder (some at a subsidised price) at local markets, small shops, health centres and hospitals.

Table 3: Frequency and percentage among Moringa farmer and actors along Moringa Supply chain.

Moringa supply chain	Level of Communication			
	Frequency		Percentage %	
	Yes	No	Yes	No
Moringa processor	8	109	6.8	93.2
Marketer	4	113	3.4	96.6
Wholesaler	30	87	25.6	74.4
Retailer	1	116	0.1	99.1
Distributor	1	116	0.1	99.1
Researcher	23	94	19.7	80.3

Source: field survey, 2014

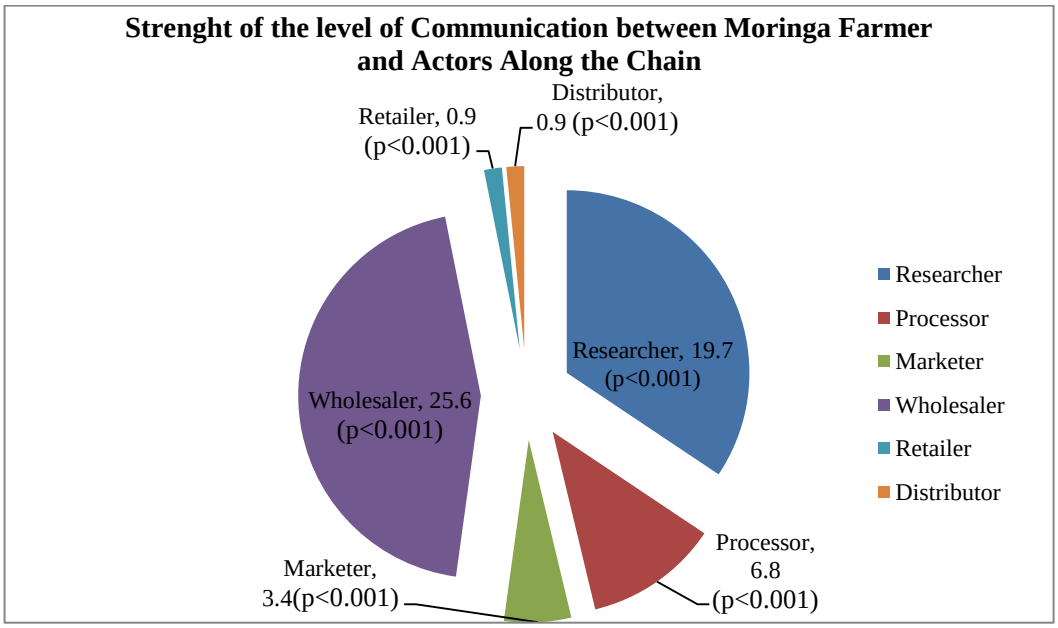

Fig 1: Chart representation of communication level

The results of this study show that Moringa leaf is more concentrated because the percentage of Moringa farmer/processor engaged mostly in leaf production and processing to powder while Moringa seed is not being used. This can be as a result of lack of equipment required for seed processing to its various products which are an innovation to increased income. According to (Radovich 2010), the main challenges facing Moringa oleifera product value chain are; unimproved crop varieties, inadequate Moringa processing facilities that encourage huge post-harvest loss and end markets' sophisticated requirements that reverberate down the chain pose major challenges. The researcher output share was observed to be highly concentrated in the sub-theme processing, value addition and food science followed by human and animal health, and Moringa nutrition. Research in another area should be done so as to update the Moringa Industry Advances in Moringa Research & development, Leading the Way to New Heights Harvesting and Extraction Frontiers of Moringa Biotechnology and so on. Research should address every thematic area: environment and human well-being, economics, technology, and geography. It was also observed that the strength of communication which is the channel of disseminating information among the actors of the supply chain is not strong. It was noted that farmers are more related to the marketer and researcher.

Constraints Encountered by Farmers along Moringa Supply Chain

As shown in Table 4, the frequency and percentage revealed that the impact of the constraints is high which could be as a result of less knowledge about Moringa. They are faced mostly with the constraint of market-related which also affect their market share concentration. Moreso, the significance of this constraint it is found to have a significant effect on the stakeholders at ($p = 0.01$).

Constraints Encountered by Moringa Researchers along Moringa Supply Chain

The frequency and percentage revealed that the impact of the constraints is high. Moreso, this constraint is found to have a significant effect on the stakeholders at ($p = 0.01, 0.5$).

Table 4: showing the frequency and percentage of the level of impact of constraints

Constraints faced by Moringa farmer/processor	High impact		Low impact		No impact		Chi^2 (differences and P value)	
	Freq	%	Freq	%	Freq	%	Chi^2	P value
Weather related	109	93.2	6	5.1	2	1.7	$1.887e^2$	0.01*
Natural disasters	110	94.0	2	1.7	5	4.3	$1.940e^2$	0.01*
Biological	110	94.0	4	3.4	3	2.6	$1.939e^2$	0.01*
Market related	114	97.4	3	2.6	0	0	$1.053e^2$	0.01*
Policy and institutional	113	96.6	3	2.6	1	0.9	$2.107e^2$	0.01*
Logistics related	106	90.6	10	6.7	1	0.9	$1.737e^2$	0.01*
Management & operational	113	96.6	2	1.7	2	1.7	$2.106e^2$	0.01*
Time	60	51.3	51	43.6	6	5.1	$42.923e^2$	0.01*
Land	87	74.4	25	21.4	5	4.3	$93.744e^2$	0.01*
Capital	58	49.6	34	29.1	25	21.4	$14.923e^2$	0.01*

Source: field survey, 2014 ; *, **, *** indicate significance of p value at 1%, 5%, 10% representatively.

Table 5: Showing the frequency and percentage of the level of impact of constraints faced by Moringa researcher

Constraints	High impact		Low impact		No impact		Chi^2	
	Freq	Percent	Freq	Percent	Freq	Percent	Differences	P value
Weather disaster	17	27.4	23	37.1	22	35.5	1.000[a]	0.607
Natural disasters	17	27.4	20	32.3	25	40.3	1.581[a]	0.454
Biological	20	32.3	22	35.5	20	32.3	0 .129[a]	0.938
Market related	33	53.2	12	19.4	17	27.4	11.645[a]	0.003**
Policy and institutional	22	35.5	25	40.3	15	24.2	2.548[a]	0.280
Logistics related	27	43.5	24	38.7	11	17.7	7.000[a]	0.03***
Management & Operational	25	40.3	27	43.5	10	16.1	8.355[a]	0.015**
Time	17	27.4	30	48.4	15	24.2	6.419[a]	0.040***
Land	10	16.1	26	41.9	26	41.9	8.258[a]	0.016**
Capital	28	45.2	22	35.5	12	19.4	6.323[a]	0.042***

Source: field survey, 2014 *, **, *** indicate significance of p value at 1%, 5%, 10% representatively.

Conclusion and Recommendations

Growing Moringa is now seen as an innovative enterprise because of the different uses and sources of income associated with it production and processing, which serve as a way to reduce poverty and improve living standards. Based on the result of this study, the following recommendations are made. Firstly, there is a need to create a platform to invite and link all Moringa farmers, producers, processors, enthusiasts, buyers, consumers, suppliers, and exporters of Moringa products. This should be done in collaboration with the governments, business community, civil society groups and academia to address the issues of sustainable development and knowledge exchange so as to develop Moringa supply chain and more innovative processes in Africa. Secondly, there is the need to popularise the plant among African farmers, most especially, in Nigeria and other developing countries using on-farm adaptive research, which collaborates with the work of Odeyinka *et al.* (2007). Lastly, there is also the need for different institutes and research bodies to involve themselves in more production, innovation and research on Moringa to boost awareness of the crop.

Reference

Adesina, B. T., Oguntuga, O. A., Raimi, K. A. A., & Ogunremi, J. B. (2013). Guide to Large Scale Production of Moringa oleifera (Lam.) for Sustainable Aquaculture Development in Nigeria: Prospects and Challenges. *Agrosearch*, *13*(3), 186-194.

Animashaun, J. (2013, September). Prospects of agriculture enterprise for sustainable economic development: the success story of University of Ilorin Moringa value-addition activities. In *Proceedings of the 4th International Conference of the African*

Association of Agricultural Economists, Hammamet, Tunisia (pp. 22-25).

Kasolo, J (2010). "Phytochemicals and uses of Moringa oleifera leave in Ugandan rural communities". Journal of medicinal plant research (1996-0875), 4(9) 753.

Muyibi, S. A., & Okuofu, C. A. (1995). Coagulation of low turbidity surface waters with Moringa oleifera seeds. *International Journal of Environmental Studies*, *48*(3-4), 263-273.

National Bureau of Statistics (NBS) (2012). Annual Abstract of Statistics, 2012 www.nigerianstat.gov.ng/pdfuploads/annual_abstract_2012.pdf

Odeyinka S. M. Tonmiro D. O., Oyedele j. O. and Asaolu V. O. (2007) "Farmers' Awareness and Knowledge of Moringa oleifera in South Western Nigeria. A perception Analysis. Asian *Journal of Plant Sciences* 6(2) 320-325.

Onyekwelu, J.C. and Olabiwonnu, A.A. (2010). Seed germination and early growth of Moringa oleifera seedlings. In: Onyekwelu, J. C., Adekunle, V. A. J. and Oke, D. O. (eds.). Proceedings of the 2nd Biennial National Conference of the Forests and Forest Products Society held at the Federal University of Technology, Akure, Nigeria between 26th and 29th April 2010. Pp 117-122.

Ozumba, N. A. (2011). Moringa oleifera: Nigeria's evergreen gold. Pax Herbal Magazine 6: 7-9.

Palada MC, Chang LC. Suggested Cultural Practices for Moringa. AVRDC International Cooperators' Guide. 2003. [Accessed April 14, 2008]. [Online] Available at http://www.avrdc.org/LC/indigenous/Moringa.pdf.

Radovich, T. (2010). Farm and forestry production and marketing profile for Moringa (Moringa oleifera).In: Elevitch, C.R. (ed.). Speciality crops for Pacific Island