

CT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON THE MARKETING OF AGRICULTURAL PRODUCE IN ANAMBRA STATE

Peace Eze, PhD

Obikeze, C. O. (Mrs.)

Marketing Department, Chukwuemeka Odimegwu Ojukwu University, Igbariam

Abstract

This study investigated the impact of Information and Communication Technology (ICT) on the productivity of agricultural marketing in Nigeria. The study embarked on pure literature review which was complemented with personal interviews with registered farmers randomly selected from four agricultural zones in Anambra State, Nigeria (Aguata, Anambra North, Awka and Onitsha). The study showed that ICT is highly beneficial to agricultural marketing in Nigeria, although Nigerian farmers rarely use them in marketing their products. These findings implies that there is high cost of production, low productivity, denial of information and limited access to market in the production and marketing of agricultural products in the country, which are the consequences of the non usage of ICT among farmers in marketing agricultural products. It is also found that lack of access to ICT tools, lack of support from responsible agencies, lack of skills in operating ICT tools and non affordability of ICT tools are some of the leading factors limiting the use of ICT in agricultural marketing among Nigerian farmers. The researchers therefore recommended that government should formulate policies enhancing the use of ICT tools for marketing agricultural products. Farmers should also be sensitized and empowered on the benefits accruing to ICT adoption. Further, there should be steady power supply for these ICT tools to be fully utilized. If these are adhered to, it is anticipated that farmers will be better placed to make the marketing of their agricultural products more effective and efficient.

Keywords: ICT, Marketing, Agricultural Produce

INTRODUCTION

Information and Communication Technology (ICT), also known Information Technology (IT), is an omnibus term that combines computer and telecommunication technologies for information acquisition, processing, storage, retrieval and dissemination. It includes hardware (television, Radio, mobile phone, telephone, computer, among others), and software (mobile phone applications, computer applications, internet services, social networks, etc.) components (Aina, 2002). The impact of ICT can no longer be over emphasized because it is increasingly causing the world to increasingly converge into a global villages; its impact is so encompassing that it is felt in all sectors of the world economy (Kodo, 2011). May, Karugia and Ndokweni (2007) are of the view that the explosive growth in computer, communication information and other digital tools has had a major impact on the ways firms bring value to their customers. Schiffman, Kanuk & Hanson (2012) have argued that the exchange between marketers and customers is increasingly interactive and instantaneous as a result of availability of a wide range of KIT tools. The role of ICT has equally been felt hi the agricultural sector, especially in the aspect of marketing.

Marketing involves finding out what your customer wants am' supplying it is a profit, (Labonne & Chase, 2000). Probed more deeply, this deceptively simple sentence manages to encompass most facets of marketing. It is also a convenient structure around which to explain the expanding role of ICT in strengthening agricultural marketing. The phrase "finding out" what you customer wants" emphasizes the role of

information in agricultural marketing, it encompasses two kinds information: (1) the immediate information required on the market's demand for specific volumes and term information on market trends required in making future plans for the farm. ICT tools facilitate the provision of both types of information. ICT tools are used for real-time market research to obtain current information and help users gradually accumulate market knowledge and insight (Kumar & Sankarakumar, 2012).

ICT is fast changing the way farmers source information, outside their immediate network. Prices of inputs (especially fertilizers) and weather information, pests and diseases alerts, technical advice and other expert advices to farmers are disseminated to farmers in many ways-broadcasted by local radio stations and television channels, published in newspapers, local language text. messages to farmers' phones and more recently posted on websites. Greater access to information seems to help farmers make better decisions around. As a result, farmers begin to leverage economies of scale, increase their negotiating power with traders, gain greater control over production and product sales by finding new sources of demand and improving their ability to adjust supply, make more informed decisions about which inputs are better and cheaper and when and where to best obtain them (Roller and Armstrong, 2010). ICT-enabled logistics system also help in setting out well-organized collection routes, conduct real-time research and identify arbitrage and market opportunities for their products (Chisita, 2010). In addition, effective agricultural commodity marketing and exchange through ICT guarantees supply of farm products to firms, leads to value addition to agricultural produce and diversification in terms of products and employment generation (Duncombe, 2006).

With such exiling growth and proliferation in the usefulness of ICT follows the concern that the Nigerian farmers have barely kept pace with advances in the array of ICT tools that can sufficiently enhance their marketing activities. As such they seem to be left behind in the ICT overwhelming jungle. Though Nigeria is an agrarian society with over 70% of the population depending on agriculture for livelihood and agricultural marketing accounting for 23% of the country's GDP and despite the fact that agriculture provides the bulk of employment, income and food for the rapidly increasing population and also raw materials to industries, Nigerian farmers are yet to fully embrace the wide range of ICT tools (Asoegwu & Asoegwu, 2007). Farming in Nigeria has been characterized by the use of obsolete farming practices, poor government rural development policy conception, poor implementation of viable policies, ineffective extension services and the challenge of accessing market for agricultural commodities (Itodo, 2011). Latchem, Maru & Alluri (2004) argued that network connectivity in many of the regions targeted is still facing a problem of electricity, funding and skills to exploit electronic technology.

According to Abuja Securities and Commodity Exchange (2013), the potentials of Nigeria's major agricultural commodities (which include cotton, groundnut, palm produce, sorghum, millet, maize, rubber, cocoa, soya beans, cowpea, etc.) are not fully utilized due to poor marketing, trading and exchange. Idachaba (2013) stated that marketing and exchanging these commodities is characterized by inefficiencies including frictions between trading partners, wasted efforts by the producers and others and food waste due to neglect of ICT, thereby constraining agricultural development in the country. He identified a number of challenges on the use of ICT including poor infrastructure, inadequate ICT skills, poor and extensive connectivity, the absence of appropriate ICT policies and language barriers. Nkrumah (2011) stated that farm information sources are limited to traditional and conventional channels (retailers, other farmers, input dealers, farm yield days and demonstrations). He noted that modern ICT tools such as mobile phones are used by women farmers as a means of communication not as a means of information while computer and internet known but not used.

Marketing of farm produce involves a lot of risks and uncertainties, because of this, Nigerian farmers need to be constantly updated on both how to better acquire inputs and market their produce through ICT tools (Itodo 2011). Chisita (2010) noted that information and communication technology tools are important for empowering small and large scale agricultural farmers effectively so that they will be able to make informed decisions. Though Chisita (2010) observed that access, efficiency and affordability of information technology are the major barriers in the battle to improve agricultural productivity among farmers this challenge can be alleviated through the exploration of innovative solutions that integrates information and communication technologies in the marketing of agricultural commodities.

Statement of the Problem

There is a general appreciation by the public of the ICT capabilities to leverage any given sector of which agriculture is one. However, the obvious disconnect between the farmers and the buying public of the

agricultural products in Nigeria tends to suggest that ICT tools have not been adequately recognized in the marketing of agricultural products in the country. Since ICT has redefined the way organizations reach their customers, farmers who fail to abreast of these changes will definitely face the consequences because competition is on rapid increase.

Unfortunately in Nigeria, small and subsistence farmers in particular tend to have unfavorable linkages to markets due to a lack of market orientation (Nwachukwu, 2011). The commercialization of agriculture and subsequent structural complexity it has induced the food system, has meant that poor farmers face higher transaction cost to access competitive markets (Pingali, 2006). The lack of effective engagement translates into the inability of farmers to utilize market information in their livelihood decisions. These suboptimal decisions in turn restrict the possibility for farmers to leverage their produce or commodities to improve and sustain their incomes, by engaging, for instance, in financial instruments such as forward contracts.

Further, the dramatic and rapid expansion in global information and communication networks in the past decade, and the concomitant proliferation of new information and communication devices, applications, services and business models pose significant new opportunities and new challenges for agricultural marketing in Nigeria (Adegbi, 2012). At the same time, poor smallholder farmers in the country face an increased risk of being left at the "bottom of the value chain", seeking to earn income from commodity crops that are increasingly volatile in price while being faced with substantial information disadvantages (impediments and costs imposed in part by physical isolation, weak infrastructure and asymmetric access) that continue to limit their leverage at market and their ability to innovate in response to food changing demand (Nwachukwu, 2011). These issues therefore increase the importance and urgency of good guidance to agricultural farmers in Nigeria on the benefits that is accruable when ICT is properly harnessed and consequences of neglecting these opportunities.

Objectives of the Study

Generally, the main objective of this study is to investigate the impact of ICT on marketing of agricultural products in Anambra State. The study proceeds with the following specific research objectives.

1. To determine the impact of ICT on communication procedures in agricultural marketing in Anambra State.
2. To ascertain the impact of ICT on agricultural marketing research in Anambra State.
3. To ascertain the impact of ICT on budgeting and forecasting procedures in agricultural marketing in Anambra State.

Significance of the Study

The study will help the Nigerian government in developing appropriate agricultural policies or reviewing the existing ones for better agricultural practices; which will in turn cause Nigerian farmers to be informed, sensitized and empowered towards the use of ICT in agricultural marketing for improved productivity in agricultural sector of the country. The paper also contributes to the body of literature on the subject and will benefit researchers in the field of social and management sciences as well as the general public wishing to widen their knowledge on the subject.

LITERATURE REVIEW

Theoretical and Empirical Review

Information and communication technology has proved useful in most human endeavor and as such continuous effort has been geared towards improving on the technologies that facilitates the processing and communication of information. According to Ogbomo and Ogbomo (2008), one of the identified agents through which the world will constantly experience change in technology. Hassan, Hassan, Shaffril and D'Silva (2009) defined information technology as a number of components including skills of accessing, recording, arranging, manipulating and presenting data or information using tools and software. It also includes communication technology (CT) which consists of telecommunication tools used to disseminate and access information.

The influence of ICT has attracted a great deal of research in this area. Okello, Kirui, Njiraini & Gitonga (2012) assessed the conditions of the use of ICT tools in general and mobile phones in particular by small holder farmers for agricultural transactions in Kenya. The use of ICT tools by farmers was measured in this study using a dichotomous (binary) choice variable of "Yes" or "No" type indicating the use or none use of

ICT tools by a farmer respectively generated from smallholder farmers located in Kirinyaga, Bungoma and Migori districts. This enabled the use of binary Logic regression model to identify the drivers of use of ICT tools (and also mobile phones). Specifically, it was found that age, occupation, nearness to output market, number of crop enterprises, farming experience literacy and crop income explain the use of ICT tools while gender, nearness to output market, household size, of the mobile for agricultural transaction purposes. Lashgarara, Mohammadi and Najafabadi (2011) explored ICT capabilities in marketing the agricultural products of Garmsar city in Iran in 2011. The applied study administered a questionnaire to 109 agricultural experts and extension agent working in agricultural services centers. Descriptive results showed that the situation of agricultural products marketing is fairly desirable. Also ICT have a moderate rule in improving of agricultural marketing.

Adegbidi (2012) used propensity score matching estimation to test the hypothesis that the access of smallholder pineapple farmers to information reduces the costs of doing business, increase income and hence increases market linkage in Benin. Evidence showed that during transactions, the use of cell phone saves time and allows the producer to save money which was used for multiple trips. The mobile phone facilitates transactions and provides access on time, to relevant information.

Evidences emanating from literature therefore indicate that information and communication technology holds great promise for agriculture in developing countries including Nigeria. This is because it provides access to information and advice to improve farming practices as well as marketing of agricultural produce. Unfortunately, Nwachukwu (2011) referred to Nigeria as an 'Information poor' country. An information society is one that makes the best use of ICTs. Martin (1995) also described an information society as one in which the quality of life as well as prospect for social change and economic development, depend increasingly upon information and its exploitation. In such a society, according to Martin (1995), living standards, patterns of work and leisure, the education system and marketplace are all influenced by advances in information and knowledge. This is evidenced by an increasing array of information intensive products and services.

Theoretical Framework of Analysis

With growing technology needs in 1970s and increasing failures of system adoption in organizations, predicting system use became an area of interest for many researchers (Chuttur, 2009). However, most of the studies earned out failed to produce reliable measure that could explain system acceptance and rejection (Davis, 1989). In 1985, Fred Davis proposed the Technology Acceptance Model (TAM) in his doctoral thesis at the MIT Sloan School Management (Davis, 1985). He proposed that system use is a response that can be explained or predicted by user motivation, which in turn, is directly influenced by an external stimulus consisting of the actual system features and capabilities as reflected in figure 1 below:

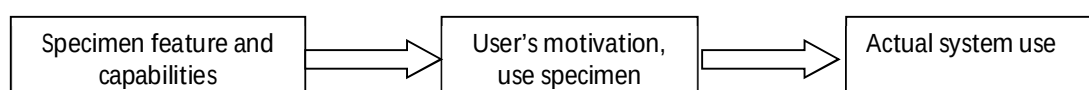


Figure 1: Conceptual Model for Technology Acceptance

During later experimentation stages, Davis (1985) would refine his model to include other variables and modify the relationships that he initially formulated. Similarly, other researchers would apply and propose several additions to Technology Acceptance Model (TAM), such that over time, TAM evolved into leading model in explaining and predicting system use (Chuttur, 2009). In fact, TAM has become so popular that it has been cited in most of the research that deals with user acceptance of technology (Lee, Kozar & Larzen, 2003).

DISCUSSION

In this section, the theoretical and empirical literatures reviewed as well as the theoretical framework of analysis were discussed. The strategies for achieving the stated research objectives were also discussed.

Discussion of Theoretical and Empirical Literature

Access to knowledge and information in many forms is the key elements of agricultural competitiveness at household, regional and international levels (United States Agency for International Development, 2003). Agricultural information and the means of its acquisition account for an increasing proportion of the final price.

However, the information by itself is insufficient unless it gets to farmers at the right time; and this can only be facilitated by the use of ICT tools such as the mobile phone, computer, internet, fax, television, radio, e-mail, digital and non-digital libraries and so on in processing and dissemination of information in agricultural sector. Arokoye (2011) argued that radio and TV are the major ICT tools used in marketing agricultural products in Nigeria. Okello et al. (2012) found that age, occupation, nearness to output market, number of crop enterprises, farming experience, literacy and crop income explain the use ICT tools. These technologies that facilitate the use, exchange and reliability of information have always been the important aspect of agriculture and marketing of agricultural products. Farmers like other businessmen need to take certain decision crucial to their marketing.

May et al. (2007) and Nkrumah (2011) all share the view that ICT has the potential to play an important role in the delivery of this information to agricultural sector in both developed and developing countries. As with other economic sectors, effective agricultural development requires access to information on all aspects of agricultural marketing. Niimmiya (2010) also noted that ICT doubtlessly contributes much to agriculture marketing, indeed, farm business have much to gain from the use of ICT, especially given their special dispersion in remote geographic location as well as their typical small scale nature.

Though Nigeria is an Agrarian society with over 70 percent of the population depending on agriculture for livelihood and agriculture accounting for 23 percent of the country's GDP' (Asoegwu and Asoegwu, 2007), Nigerian farmers are fully embrace the wide range of ICT tools. Despite the fact that agriculture provides the bulk of employment, income and food for the rapidly increasing population and also supplies raw materials to industries, farming in Nigeria has been characterized by the use of obsolete (arming practices, poor government rural development policy conception, poor implementation of the viable policy, ineffective extension services and the challenges of accessing market for agricultural products (Itodo, 2011). Latchem, Muru and Alluri (2004) argued that network connectivity in many regions targeted is still a problem, electricity, landing and skills to exploit electronic technology. Munyua (2007) also identified a number of challenges on the use of ICT including poor infrastructure, adequate ICT skills, poor and expensive connectivity, the absence of appropriate ICT policies and language barriers. Nkrumah (2011) argued that farm information sources were limited to traditional and conventional channels (retailers, other farmers, input dealers, farm field days and demonstrations).

All these inefficiencies require developing countries to undertake a complex set of policy, investment, innovation and capacity-building measures, in close coordination with international donors, the private sector and other partners to encourage the growth of locally appropriate, affordable and sustainable ICT infrastructure, tools, applications and services for the agriculture sector and the rural economy.

Discussion of the Stated Theoretical Framework

The Technology Acceptance Model (TAM) has been found to be relevant to this study and as such, its tenets can form the base upon which our work can be anchored. For instance, the assumption that the acceptance to use any system partly depends on perceived usefulness and perceived ease of use rightly aligns itself with what we seek to establish in this research. It is possible that Nigerian farmers neglect the use of ICT tools because they are not informed about the benefits derivable from the use of ICT and the perceived difficulty in using ICT tools. With partial neglect of the use of ICT' (Actual System Use as reflected in our model) the consequences of not using ICT tools will inevitable occur.

Discussions of Strategies for achieving the research objectives

The study embarked on pure literature review but was complemented with personal interviews with registered farmers randomly selected from the four agricultural zones in Anambra State, Nigeria (Aguata, Anambra North, Awka and Onitsha). The materials sourced from the Internet were obtained through the use of key words such as agricultural marketing, role of ICT in agricultural marketing and future of agricultural marketing in Nigeria.

Conclusion

It has been noted that lack of access to ICT tools, lack of support from responsible agencies, lack of skills in operating ICT tools, non affordability of ICT tools and so on are the major barriers in the battle to improve agricultural marketing among farmers Nigerian farmers do not make use of all ICT tools as they do not have access to some of the tools that facilitates speedy delivery of information. They still depend mainly on

the traditional means of disseminating information even though they are aware of the benefits of information technology to agricultural marketing. However, several factors have been found as limiting factors to farmers in the use of ICT tools. They include poverty, lack of ICT training, poor power supply, poor network services and so on. Consequently, the non-use of ICT for agricultural marketing results to denial of timely information, increased cost of transportation, delay in distribution of agricultural produce, difficulty in linking with customers, limited access to market and so on.

Recommendations

Based on the findings, the following recommendations are made;

1. Government should develop policies, strategies and priorities that will advocate best practices towards the agricultural sector.
2. Government should develop partnerships mechanisms that will involve all interested Stakeholders in ICT development and utilization.
3. Government should equally identify and engage funding institutions that would support e-agricultural activities.
4. The Ministry of Agriculture should organize periodic seminars and sensitization programmes for farmers on the importance of information and communication technology.
5. Government should equip the Agricultural Centers with these technologies and should provide other infrastructures that will facilitate the use of ICT.
6. Finally, with the acquisition of improved and better ICT tools, the farmers will be able to involve all interested stakeholders for better agricultural marketing practices.

References

- Abuja Securities and Commodity Exchange (2013). Securities and Commodity Exchange Publications, Abuja, Nigeria
- Adegbidi, A. B. (2012). Impact of ICT Use on Access to Markets of Pineapple Smallholders' Farmers in Benin. *Journal of Research in International Business and Management*, 2 (9), 240-247.
- Aina, L.O. (2004). Introduction to Research in Information Sciences. An African Perspective. Ibadan: Stirling-Horden Publishers (Nigeria) Ltd.
- Arokoyo, T. (2011). ICTs in the Transformation of Agricultural Extension: The case of Nigeria. www.pdfgeni.com/arokoyo.pdf
- Asoegwu, S. N. & Asoegwu, A. O. (2007). An Overview of Agricultural Mechanization and Us Environmental Management in Nigeria. *Agricultural Engineering International*. the CIGR E-journal, Invited overview, IX (6). www.pdfgeni.com/asoegwu
- Camacho, A., Conover, E, & Iloyos, A. (2007). Information and Communication Technologies (ICT) and Social Empowerment. www.pdfgeni.com
- Chapman, R, Slaymaker, T. & Young, J. (2003). Livelihood Approaches to Information and Communication in Support of Rural Poverty Elimination and Food Security, Bridging Research and Policy. Overseas Development Institute, UK.
- Chista, C. T. (2010). An Investigation into the use of ICT in the provision of Agricultural Information to Small Scale Farmers in Harare. World Library and Information Congress. 76th IFELA General Conference and Assembly 10 - 15 August 2010, Gothenburg, Sweden. <http://www.ifla.org/en/infla76>
- Chuttur, M. Y. (2009). Overview of the Technology Acceptance Model: Origins, Developments, Future Directions. Indiana University, USA, *Sprout: Working Papers on Information Systems*, 9(37), <http://sprouts.aisnet.org/9-37>.
- Davis, F. (1985). A Technology Acceptance Model for Empirical Testing. New End-User Information System: Theory and Results. Unpublished Doctoral Dissertation, MIT Sloan School of Management, Cambridge, MA.
- Davis, F. (1985). Perceived Usefulness, Perceived Ease of Use and User acceptance of Information Technology, *MIS Quarterly*, 13(3), 319-340.

- Duncombe, R. (2006) Analyzing ICT Applications for Poverty Reduction via Micro-Enterprise Using the Livelihoods Framework; Development Informatics Group, Institute for Development Policy and Management (1DPM).
- Fishbein, M. & Ajzen, I. (2006). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Reading, MA: Addison - Wesley.
- Hassan, M. A., Hassan, M. S., Shaffril, H. M. & D'Silva, J. L. (2009). Problems and Obstacles Using Information and Communication Technology (ICT) among Malaysian Agro-based Enterprises. *European Journal of Scientific Research*, 36(1), 93-101.
- Heather, K. & Gordon, A. (2001). Agricultural marketing in Developing Countries: The Role of NGOs and CBOS. www.nri.org/publications/policyseriesNo.13.pdf
- Kizilaslan, N. (2006). Agricultural Information Systems: A National Case Study. *Library Review*, 55, 497-507.
- Kotler, P. & Armstrong, G. (2010). *Principles of Marketing 13 Ed.* London; Pearson,
- Kumar, G. & Sankarakumar, R. (2012). Impact of Information and Communication Technology in Agriculture - Perception of the Farmers in Ramanathapuram District, *International Journal of Statistika and Matematika*, 4(2), 33-41.
- Labonne, J. & Chase, R. S. (2009). The Power of Information: The Impact of ICT on Farmers' Welfare". World Bank Policy Research Working Paper No. 4996.
- Lashgarara, F. Mohammadi R. & Najafabadi, M. O. (2011). ICT Capabilities in Improving Marketing of Agricultural productions of Garmsar Township, Iran, *Annals of Biological Research*, 2 (6), 356-363.
- Latchem, C. Maru, A. & Alluri, K. (2004). The L3 farmers Project Report and Recommendations to the Commonwealth of Learning on Open and Distance Lifelong Learning for Smallholder Farmers and Agricultural Communities. www.pdfgeni.com/13famers.
- Lee, Y., Kozar, K. A. & Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present and Future. *Communications of the AIS*, 12(50), 752-780.
- Itodo, A.S. (2011). Using ICTs to Bridge the Agricultural Intension Gap and Improving Market Access for Rural Farmers in Nigeria: A Practical Approach. www.ifpri.org/publication
- Manyong, V. M., Ikpi, A., Olayemi, J. K., Yusuf, S. A., Omonona, B. T., Okoruwa V. and Idachaba, F. S. (2005). Agriculture in Nigeria: *Identifying Opportunities for Increased Commercialization and Investment*. International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria, 159 P. www.ita.org
- Martin, J. W. (1995). *The Global Information Society*. England: Aslib, O.3.
- May, J., Karugia, J. & Ndokweni, M. (2007). *Information and Communication Technologies and Agricultural Development in Sub-Sahara Africa: Transformation and Employment generation*. A final paper prepared for African Economic Research Consortium (AERC). www.aerc.org
- Munyua, H. (2007). ICTs and Small-Scale Agriculture in Africa: A Scoping Study. International Development Research Center (IDRC). www.idrc.com
- Ninomiya, S. (2004). Successful Information Technology (IT) for Agriculture and Rural Development. <http://www.agnet.org/library/eb549/>
- Nkrumah, K.C. K. (2011). *Promoting Access in Agricultural Information by Women Farmers Using Information and Communication Technology: The 5th Pan-Commonwealth Forum on Learning*. <http://groups.google.com/group/wikieducatordiscussiongroups>
- Nwachukwu, M. A. (2011). Development of Information technology in Nigeria. www.unu.edu
- Ogbomo, M. O. & Ogbomo, E. F. (2008). *Importance of Information and Communication Technologies (ICTs) in making a Healthy Information Society: A case study of Ehiye East Local Government Area of Delta State, Nigeria*. www.webpages.uidaho.edu/mbolin/ogbomo2.pdf
- Okello, J. J., Kirui, O. K., Njiraini, G. W. & Gitonga, Z. M. (2012). Drivers of Use of Information and Communication Technologies by Farm Households: The Case of Smallholder Farmers in Kenya, *Journal of Agricultural Science*, 4(2), 111-124.

- Orbundle, A. K. (2010). *Communication as an Effective tool in Agricultural Marketing Information System (AMIS) Dissemination: Implications for the future.*
<http://ifsa.boku.ac.at/cms/fileadmin/proceeding2010WST3.Orbundle.pdf>
- Pingali, P. (2006). *Agricultural Growth and Economic Development: A View through the Globalization Lens. Presidential Address: 26th International Conference of Agricultural Economics, Gold Coast, Australia.*
- Ralbadiwakara, D., De'Silva, H. & Soysa, S. (2008). *Transaction Costs in Agriculture: From Planting Decision to Selling at the Wholesale Market. A Case Study on the Feeder Area of the Dambulla Dedicated Economic Centre in Sri Lanka, 3rd Communication Policy Research South (CPR south) Conference, Beijing, China.* Available at: <http://ssrn.com/abstract=1555458>
- Schiffman, L. G., Kanuk, L.L. & Hansen, H. (2012). *Consumer behaviour: A European outlook*, 2nd ed. Harlow; Pearson Education Ltd, 460P.
- Shaik, N. M., Jhamlani, A. & Rao, D. U. M. (2004). *Information Communication Technology in Agricultural development: A comparative analysis of Three Projects from India, Agricultural Research and Extension Network. (AGREN). Network paper No15.*
<http://www.odi.org.uk/agreen>.
- Timmer, C. P. (1997). *Farmers and Markets: The Political Economy of New Paradigms. American Journal of Agricultural Economics*, 79, 621-27.
- USAID (2013). *Future Directions in Agriculture and Information Communication Technologies (ICTs) at USAID.* Winrock International, Academy for Educational Development (AED).
<http://www.aed.org/Winrock/usaaid>.
- Wesseler, G., Elder, L. & Veldhuizen, J. C. (2004). *Bridging the Gender Divide in ICTs Update.*
<http://ictupdate.cta.int/>