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The Role of Information Professionals in Fostering Adoption of Agricultural Innovations by Farmers in Embu, Kenya.

Kavita, Nester

Moi University, Kenya Eldoret 30100, Kenya.

***Corresponding Authors:** Kavita, Nester, Moi University, Kenya Eldoret 30100, Kenya. nesterkavita@gmail.com*

ABSTRACT

This paper is part of a study carried out to investigate the accessibility and use of agricultural information by farmers in Embu, Kenya. 13 Librarians (information professionals) were among the key informants and were interviewed using a semi-structured questionnaire. The study was informed by Roger's Diffusion Of Innovations (DOI) theory, Rural Knowledge Centre model, Telecentres model and Wilson's information seeking behavior model. SPSS data analysis software was used for data analysis. The results reveal that information infrastructure in Embu County is not well interlinked while information resources as well as Librarians' qualifications are inadequate leading to poor information services particularly for the farmers.

Recommendations include recruitment of agricultural subject information professionals for each library and creation and Interlinking of agricultural telecentres, tapping into the free service offered by Agricultural Information Resource Centre (AIRC), co-ordination and strong linkage of all library and information services within Embu County with a clear and purposive aim of playing their part in the agricultural information, knowledge and technology transfer. The County government to financially support linkage between research, education, extension, farmers and other stakeholders so as to improve the performance of the agricultural system. Indigenous agricultural knowledge need to be recorded for posterity and further research.

Keywords: *Agricultural Librarians, Agricultural Information, Telecentres, Farmers kenya Agriculture*

INTRODUCTION

Pertinent information and or knowledge about innovations are crucial in any sphere of life. Skilled information professionals are able to penetrate the information resources plethora, select, and evaluate them for relevance, organize and disseminate the same for timely use by clientele. Information resources in this day and age are presented in diverse formats which may include electronic resources (offline and online via the internet), Audio Visuals (A/Vs) such as Video cassettes, Compact Disks(CDs) and films, Non Book Materials (NBMs) such as posters and portraits and physical print resources such as books, journals, magazines and pamphlets inter alia.

Information professionals (variously referred to as librarians, documentalists, information scientists and records managers inter alia) need to take the cue on the rapid changes that Information Technology (IT) is metamorphosing to. Just like the aerodynamic forces are said to change the trajectory of a ball in a football field, so does the IT in the articulation of any form of information and or knowledge dissemination. The era of priding oneself on the magnitude of the book stock in a library has been overtaken by the level of timely availability of information and or knowledge to the clientele in diverse modes and formats.

Background Information

Agriculture is the mainstay of Kenya's economy and those of other African economies. Kenya is food insecure due to low agriculture productivity, low value addition, and high post-harvest losses. Low productivity is attributed to poor farming systems, over-reliance on rainfall, and high costs of inputs (seeds, fertilizer, pesticides) - KIPPRA, (2017).

Agriculture is nonetheless very crucial to Kenya's economy, contributing 26 per cent of the Gross Domestic Product (GDP) and another 27 per cent of GDP indirectly through linkages with other sectors.

The sector employs more than 40 per cent of the total population and more than 70 per cent of Kenya's rural people. Agriculture in Kenya is

large and complex, with a multitude of public, parastatal, non-governmental and private sectors (FAO, 2018).

The already burgeoning Kenyan population (estimated at 47million as of July, 2017) is estimated to reach 81million by the year 2039 (FAO, 2018). At this fast population growth rate, the arable land set aside for cultivation is quickly dwindling by the day, calling for innovative and intensive farming methods for sustainable food security. As at now, 46 per cent of Kenyan population live on less than 1 USD a day while 36.5 per cent are food insecure (FAO, 2018).

The FAO (2018) brief report states that, ―given the importance of agriculture in rural areas of Kenya where poverty is prevalent, the sector's importance in poverty alleviation cannot be overstated. Strengthening and improving the performance of the agricultural sector and enabling the engagement of the poorest and most vulnerable in this process is therefore a prerequisite and a necessary condition for achieving recovery and growth in Kenya after recent years of drought and slow development‖.

The diversity in the farmers'socio-economic status and information literacy dictates that a more intensive and personalized information service be engaged.

Sub-Saharan African countries where agriculture is the predominant sector that underpins the livelihood of the majority of the poor, increasing technology adoption such as new agricultural practices, high-yielding varieties, and the associated products such as crop insurance have the potential to contribute to economic growth and poverty reduction among the poor (Kelsey, 2011 as cited by Sisay, 2018).

LITERATURE REVIEW

Farmers' Information needs

When explaining about the farming community in India, Naidu (2018) posits that the farming community can be classified into two categories, that is, small and big farmers depending on the size of land cultivated by them and that they are either literate or illiterate.

Naidu (2018) further explicates that the literate farmer, may be provided with information through training or print or electronic media, but in the case of illiterate farmers, these methods of communication are like beating drums in front of the deaf. This category of farming community can be made literate effectively by audio-visual and demonstration methods. In addition, Naidu (2018) affirms that farmers need information on improved variety of seeds, pesticides, agricultural equipment, weather conditions, harvest and post-harvest technology like storage

Availability and Use of Agricultural Information by Farmers in Kenya

Universal availability of information pertaining to development is a concept that should be embraced globally by all governments. Diffusion of Knowledge on agricultural innovations is paramount for optimal production and food security assurance. It is for this reason that astute information professionals need to be groomed-in all facets of national economy including agriculture- in order to facilitate delivery of relevant and prompt information as well as technical knowhow to all and sundry.

The exponential growth in diverse Information Communication Technologies (ICTs) has been a boon to information professionals and subsequently the farmers as well. In addition, Nathaniels, Lamboll, Conroy &Youdeowei (2008) note that Notions of agricultural development have changed from earlier concepts of one-way supply driven technology transfer to the more inclusive current concepts of innovation systems, synergies, ownership, and the importance of demand. This trend is mirrored by an increasing realization that although agriculture has global and universal elements, farmers' ability to use and maintain a beneficial agro-ecological environment is linked to local knowledge and biodiversity.

Rural Development Problems and Prospects

Singh (2018) affirms that throughout the world, almost all poor people live in rural areas and they depend mainly on agriculture and allied activities for their livelihood and overall well-being. Singh (2018) further posits that development of physical as well as social infrastructure plays an important role in the overall advance of the rural economy by directly contributing to employment generation and asset creation.

Singh (2018) recommends formation of a globalized or Model Village which is perceived as a village having all modern physical and social infrastructure facilities. The model village would facilitate human resource development through better education, health and training and

generate employment avenues both in secondary and tertiary sectors. According to the concept of a globalised village, each village will be connected with modern information technology for better dissemination of information. This type of a village would have the potential of producing human resources catering to national as well as international requirements.

Agricultural Information and Knowledge for Socio-economic Development

Naidu (2018) affirms the position of information for human socio-economic development in citing subject experts who have ―described information as the fifth need of man ranking after air, water, food and shelter. In view of the vital role played by information in daily life, it should be considered as the first need in terms of survival‖ p.1.

In the discourse on both literate and illiterate farmers in rural India, Naidu (2018) further posits that information dissemination to all levels of farmers is vital and notes that literate farmers can access online information while audio-visual resources coupled with demonstrations would facilitate smooth communication to the illiterate ones.

Agro-processing among other sub-sectors is earmarked as a priority sector in Kenya's industrial transformation programme (KIPPRA, 2017). It is the aspiration for Kenya to become an upper middle income country by 2030 and currently Kenya is classified as a lower middle income country. To attain the upper middle income category, at the minimum, the economy needs to achieve the Vision 2030 growth trajectory (KIPPRA, 2017). For the country to achieve this level of growth, all sectors will have to fully play their role in building the economy.

The agricultural sector will ultimately require relevant and timely information and technical knowledge on how to boost production as well as how to add value to it through processing formational and international market. In an effort to revamp economy and improve living standards, Kenya government launched a programme referred to as ―Big Four Pillars in December, 2017. The pillars include manufacturing, affordable healthcare, affordable housing and food security. Continuous provision of timely and relevant information and or knowledge for each pillar is crucial.

The call to boost the economy should ignite the will of information professionals to provide information and knowledge to all stakeholders with even greater prowess.

According to Sisay (2018), generation of technology is not an end by itself. It must be utilized by end users. This can be realised through the presence of effective linkage among the major stakeholders in the agriculture, agricultural knowledge and information system. Linkages between major institutional actors in agricultural knowledge and information system are widely recognized as essential for an effective flow of technology and information between research, extension and farmers.

Need for Agricultural Subject Information Specialists

Womboh (1999) traces the poor agricultural production situation in Nigeria which gave rise to food insecurity, forcing the government to take various measures to contain the resultant food scarcity. One of those measures is reported to be the establishment of Universities of Agriculture (Uni-Agrics) with the specific mission to transform agriculture through training, research and extension in order to boost food production.

After giving a brief history of the education and training of librarians in Nigeria, the author is noted to have submitted that such training is not suitable for prospective subject agricultural librarians. This affirms the express need to specifically and formally train agricultural graduates at postgraduate level on how to carry out agricultural information services not only to the farmers but to all stake holders in the agricultural sector.

Bibliographic Control of Agricultural Information Resources

In the review of the state of agricultural literature control in Nigeria, Omekwu, (2003) has noted that foreign-based bibliographical services do not adequately cover literature emanating from the country.

With this backdrop, Omekwu, (2003), calls for a conceptual framework for the evolution of a national agricultural information management system that would involve functional integration of all agencies and individuals involved in the production, processing, provision, and utilization of agricultural information.

Efficient and effective control of agricultural information resources ensures that the researchers and other stakeholders are well versed with information, technical knowledge as

well as upcoming innovations. Their technical innovations eventually cascade to the extension agents and farmers for improved production.

Agricultural information management (AIM) is concerned with all activities and resources necessary for acquisition, storage, updating, and making agricultural information and data of all kinds and formats—scientific research reports, growers' testimonies, market information, details of practical crop production technologies, machinery, weather forecasts, sources of credit, production, education and training and other instructional manuals, ‗grey zone' literature—accessible to agricultural stakeholders at all levels. Nathaniels, Lamboll, Conroy & Youdeowei (2008).

The Status of Information Infrastructure in Kenya

Significant efforts have been made in development of Kenya's infrastructure–transport, energy and information technology–with a view to enhancing efficiency in production, trade and investments, (KIPPRA, 2017).

Effective physical as well as other forms of infrastructure are requisite to smooth co-ordination and dissemination of any form of information in a system, agricultural information is no exception.

According to Nathaniels, Lamboll, Conroy & Youdeowei (2008), AIM considers not only information resources and technologies, but also development of the human resources needed for efficient use of these technologies. Evidence gained through experience proves that it is prudent to have the subject knowledge of whatever discipline first before one takes up the role of a subject librarian in a particular subject field.

This means that the information professional or rather librarian will not only be able to mellow well with the clientele in the particular subject area but will also be articulate in information and knowledge delivery. Unlike in a special library or information centre, in an academic situation, subject librarians are embedded in a faculty or school so as to provide more consistent and personalized assistance to students and faculty in their research endeavors.

Dewes & Hoffman (2010) clarify that close physical proximity is not required for embedded services to exist, but close proximity provides the librarian an advantage in better understanding their users'needs.

ICTs for Networking, Dissemination of information and Knowledge

Communication Technologies (ICTs) have become crucial enabler's of socio-economic development mainly through reduced transaction costs and enhanced efficiency in connectivity. Besides being pivotal in sectors like telecommunications and financial intermediation, ICTs are increasingly being applied across all the economic activities. Kenya government has made considerable effort to enhance broadband availability and connectivity through the implementation of the National ICT Infrastructure. The laying of the fiber optic infrastructure has resulted to faster communications and enhanced use of online services such as e-government and e-commerce. Over the years, the government has also facilitated the development of the digital economy through ensuring competition and encouraging innovation.

Telecentres for Organization, Storage and Retrieval of Agricultural Information

A study on the users' perceptions of trust in libraries, telecentres and cybercafés in developing countries by Gomez & Gould (2010) reveals that the use of public access venues is shaped by the following trust factors: safety concerns, relevance of the information, reputation of the institution, and users' perceptions of how ―cool‖ these venues are. While libraries tend to be trusted as most reputable, telecentres tend to be trusted as most relevant to meet local needs, and cybercafés tend to be perceived as most ―cool‖.

Establishment of ICT based telecentres in the rural villages would facilitate timely provision of needed information as well as technical support. In addition, agro telemarketing would be enabled through provision of farmer buyer linkage. Farmers would be informed about the agro meteorological information such as the expected amounts of rains and the contingent measures to take in case of foreseen draught. The social media (radio and TV) coupled with the mobile phone texting service would enable ventilation of information amongst farmers. The County ran telecentres to act promptly in response to all farmers'queries and should organize publicity or marketing campaigns to hammer innovations to the farmers.

The recent World Summit on the Information Society (WSIS) Forum 2018 aim was to foster partnerships, showcase innovation, exchange best practices and announce new tools and

initiatives to use ICTs to advance the United Nations' Sustainable Development Goals (SDGs). Among the 17 SDGs, ―No to Poverty‖ and ―Zero hunger‖ take precedence depicting the essence of food for humanity survival. It is therefore imperative that agricultural sectors in both developed and developing economies have to innovatively aspire to increase their agricultural production to mitigate the looming food crisis for burgeoning world population. Increased use of ICTs to indiscriminately disseminate the so much needed agricultural information and technical knowhow to the farmers is invaluable. The ICTs may include may include the mass media (TV and radio), Mobile phones, videos, films and the internet connection inter alia.

A pilot agricultural knowledge centre that was established in Machakos town, Kenya, is noted by Nathaniels, Lamboll, Conroy &Youdeowei (2008) to house both traditional and modern ICTs including computers with internet and email, telephone, fax, scanner, digital camera, TV, VRC, DVD and satellite radio. The information provided covers mainly agricultural production and marketing, natural resources but also public health and other topics.

THEORETICAL FRAMEWORK

This study was informed by Rogers' Diffusion of Innovations (DOI) theory and various information communication or dissemination models such as the Rural Knowledge Centre model, Telecentres model and Wilson's information seeking behaviour model.

Methodology

This paper is part of a study conducted in Embu County, Kenya, as a requisite for the award of a PhD degree in information science. The study is entitled ―Accessibility and Use of Agricultural Information by Farmers in Kenya: a Case Study of Embu County. The key respondents included 210 local farmers.

The key informants included the 50 extension personnel, 14 agricultural researchers, 32 agricultural planners and policy makers, 13 librarians (includes information scientists and documentalists) and 5 Focus Group Discussions (FGDs).

This paper will specifically consider the role of the librarians (including all other information professionals) and the problems and prospects of agricultural information infrastructure in Kenya and Embu County in particular.

Research Design

The 13 Information professionals (referred to as librarians) among other key informants were involved in this study with a sole purpose of investigating their respective roles in fuelling Kenya's economic growth which is highly dependent on agriculture.Data was collected using a semi-structured interview schedule.

Sampling Technique

13 Librarians were purposively visited and where possible interviewed on one on one basis. However, more than half filled the semi-structured interview schedule independently. College and School libraries within the county were not involved in this study due to time constraints. The institutions and organisations from where different levels of library and information personnel in this study were selected from were as follows;

- Kenya National Library Services (KNLS) Staff in Embu County.
- Library Assistant from Embu Agricultural Staff Training (EAST) College, now University of Embu.
- Library Assistant from Kenya Agricultural and Livestock Research Organisation (KALRO), Embu Regional Centre.
- Library Assistants from Kenya School of Government (KSG), formerly, Government Training Institute (GTI), Embu.
- Director, Information Services – Kenya Broadcasting Corporation (KBC), Embu.
- Deputy Director of Library services (Administration), KNLS, Nairobi.
- Documentalists and Librarian – Agricultural Information Resource Centre (AIRC).

RESULTS AND DISCUSSIONS

The study investigated the role of Agricultural Information Resource Centre (AIRC) – a Division in the Ministry of Agriculture, Livestock and Fisheries (MOALF) at Kabete. Its services informed this study on the national status quo of agricultural information services in the agricultural sector. Among its various departments, the Mass Media, Library Information Services, Documentation and User services were found pertinent to this study. AIRC repackages agricultural information in form of pamphlets, handbooks, radio and TV programmes, (for example Sikio la Mukulima and Shamba Shape-up‖ respectively) for rural farmers in simple English, Kiswahili and

indigenous languages where possible. It also records some of the pertinent information in films and videos commonly screened during annual agricultural shows (heldin each county at different times of the year). AIRC also runs a ―Question and Answer Service‖ for all levels of agricultural information users, including farmers, extension personnel, teachers and librarians inter alia. The information professionals running the three departments are agricultural scientists with training in information science. AIRC should ideally meet agricultural information needs of all the stakeholders in Kenya, but much to the staff chagrin, the demand is overwhelming.

Librarians and Other Information Professionals: Personal Information

The librarians interviewed in this study comprised of 38.5% male and 61.5% female. Among them, 61.5% were in the 30-39 years age range while 38.5% were in 40-49 years age range. Table 1 below shows that 38.5% of the librarians interviewed were Library Assistants I; 30.8% were Library Assistants II; 15.4% were Senior Library Assistants; 7.7%, Principal Librarians and 7.7%, Deputy Director of Library Services (Finance and Administration, KNLS).

The official designations of 13 librarians in Embu County are shown in table1 below;

Table1. *Librarians: Official Designation. N=13*

Position	Frequency	Percentage
Library Assistant I	5	38.5
Library Assistant II	4	30.8
Senior Library Assistant	2	15.4
Principal Librarian, KNLS	1	7.7
Deputy Director (Finance and dministration), KNLS	1	7.7
Totals	**13**	**100.0**

Marital Status

69.2% of the librarians that were interviewed were married, 23.1% were single while one (7.7%) was widowed.

Competency in Furthering Agricultural Information Dissemination

The library staff in libraries in Embu County and particularly those working with the Kenya National Library Services (KNLS) were very enthusiastic and responsive about provision of agricultural information to the Embu County farming community.

Their professional qualifications make them suitable to do nominal selection and dissemination agricultural information as they do not have agriculture subject background (see table 2 below). The least trained in librarianship have Certificates and or Diplomas in Library and Information Science. Quite a number are enrolled for their Bachelor‘s degrees on Open learning mode while one has a Bachelor‘s degree and the other a Masters in Library Science.

With the implementation of devolution of functions the County government should consider improving the services offered by KNLS, Embu area library, the Sub-County Documentation Centre (SCDC) and KALRO, Embu Regional Centre. That way, they can also introduce special services to suit specific needs of farmers while at the same time carrying out their main role of serving their respective clientele. Special collections on agricultural information resources could be acquired with the farmers in mind.

The collections can be in various formats so as to suit different information needs, wants and demands. Some of the literate farmers would be able to access the information resources directly while the extension personnel could also borrow the same for use during farmers‘field days to demonstrate innovations.

Education Level

Table 2 shows that 61.5% of the librarians interviewed have a Diploma in Library and Information Studies, 15.4% have a Certificate in Library and Information Studies, 15.4% have a Master of Library Studies (MLS) and only one (7.7%) has a Bsc. degree in Information Sciences.

Table2. *Librarians: Education Level. N=13*

Item	Frequency	Percentage
Certificate	2	15.4
Diploma in Information Studies	8	61.5
Bsc. Information Sciences	1	7.7
Master of Library Studies (MLS)	2	15.4
Totals	**13**	**100**

The KNLS Mobile Service Library would be an ideal service to bring agricultural information services closer to the villages as they visit and serve schools via the mobile library service. In

this regard, collaborations and any other partnerships could be negotiated for with private firms, government and Non-Governmental Organisations (NGOs) in the agricultural field for funding and or information resources provision. This would entail stocking the library with relevant current agricultural information resources and at the same time provide the equipment required (if any) to use the information resources.These may include TV sets and VCRs, LCD projectors and computers, among others. While there is need to increase library personnel, capacity building or development of current staff would require provision of study scholarships and in-house continuous training (using seminars and workshops inter alia) particularly on the use of ICTs for information delivery services. Recruitment of at least one agricultural scientist with a postgraduate degree in library and information science would be of great benefit in the selection, acquisition, organisation retrieval and dissemination of all relevant information resources deemed useful to the farming community in the county.

Available Agricultural Information Resources

The librarians were asked to state the information services and resources that are offered by their respective libraries in order to meet the agricultural information needs of the farming community. From the findings, 61.5% indicated books and pamphlets, 30.8% specified books on animal husbandry while, 23.1% mentioned particularly books on poultry. The other findings are shown in table 3 below.

Table3. *Librarians: Available Agricultural Information Resources.*

Item	Frequency	Percentage
Books and Pamphlets	8	61.5%
Books on Animal Husbandry	4	30.8%
Books on Poultry	3	23.1%
Books on Soil Science	2	15.4%
Agricultural Scholarly Journals	2	15.4%
Books on Agricultural Machinery	1	7.7%
Books on Beekeeping	2	15.4%
Seminars and Workshops	1	7.7%
Farmer Field Days and Visits	1	7.7%

Availability of Special Collection

Asked whether their libraries "have a special collection to expressly serve the farming community," the respondents indicated that books and pamphlets were available for use by the farmers. From the findings, 61.5% said no and 38.5% yes.

Those who replied in the affirmative were asked to list the format/s of the information resources. The results were; 23.1% listed books, 7.7% listed charts and 7.7% listed NAFIS database (see table 4). Although some of the respondents seem not to have clearly understood the question, they were in agreement about the need to set up a special collection for agricultural information resources to serve the farmers.

Table4. *Librarians: Type of Resource. N=13*

Item	Frequency	Percentage
Books	3	23.1
Charts	1	7.7
NAFIS database	1	7.7
Non-response	8	61.5
Totals	**13**	**100.0**

Explanation for Special Collection

The librarians who replied that they did not have special collections for the farmers in their libraries were further asked if they think it would be prudent to mount special collections expressly to serve the farmers. They all (100%) said yes to this question.

Table5. *Librarians: Explanationfor Special Collection. N=13*

Item	Frequency	Percentage
For economic development	4	30.8
Potential tapping	3	23.1
Facilitate marketing of information resources	1	7.7
Non-response	5	38.5
Totals	**13**	**100.0**

When asked to explain further why they think it is important to have a special collection for the farmers. Their responses are shown in Table 5 below as follows; 30.8% said for economic development, 23.1% for potential tapping and 7.7% to facilitate marketing of the information resources.

Agricultural Clientele Awareness of the Available Library Services

The librarians were further asked to state the purpose of the farmers' visits to the library. All

the respondents indicated that farmers visit the library, with the majority (38.5%) stating the reason for visiting as that of seeking information on farming methods and animal husbandry (see table 6 below).

Therefore, one can conclude that the farmers who visit the libraries are in close proximity and may not necessarily go there looking for agricultural information. However, there is need to stock the library with appropriate information resources for use by the farmers as well as the extension personnel.

The county government should consider allocating funds for collection development of agricultural information resources, marketing and maintenance in all libraries within the county. The cost of equipment needed (computers, LCD projectors among others) to use these information resources would have to be included in the budget allocation.

The librarians reported that there is gender disparity in terms of library visits.

From observation, 90% (9) of the librarians indicated that male farmers visit the libraries while only 10% (1) noted that there is no gender imbalance in terms of visits.

However, there is no clear cut or empirical evidence as to whether the farmers use the library mainly for leisure reading or to meet their farming information needs.

The collections in all the libraries were observed to be totally inadequate in as far as agriculture is concerned.

Therefore, there is need for a well-planned special agricultural information resources collection development which contains all possible formats of information resources. If the libraries could develop farmer suited hybrid collections consisting of Audio-Visual, electronic and print (pamphlets, charts, posters, handbooks inter alia) agricultural information resources, then farmers and extension personnel would at least be attracted to use them.

Farmers' Visit to Libraries

The librarians were asked whether the farmers visit their respective libraries. Their answers were in the affirmative with 100% (13) saying yes to the question. The reason for visits is indicated in table 6 below.

Table6. *Librarians: Purposeof Farmers' Library Visit. N=13*

Item	Frequency	Percentage
To improve their agricultural activities	4	30.8
Seek information about farming methods and animal husbandry	5	38.5
To know the type of crops to grow	1	7.7
Agricultural knowledge	2	15.4
Current technologies update	1	7.7
Total	**13**	**100**

Problems Experienced When Serving Farmers

The librarians were asked whether they experienced any problems when serving farmers. From the findings, 92.3% said that they experienced problems when serving farmers while only 7.7% said they did not experience any problems. Those who experienced problems when serving farmers were asked to state the kind of problems they faced. Their comments are shown in table 7 below as follows; 69.2% said that the library lacked current information resources, 15.4% said that farmers lack library skills and 7.7% cited communication barrier as the problem faced. This may be construed to be on language problems particularly where the farmer can only communicate in vernacular.

Table7. *Librarians:Bottlenecks Explanation. N=13*

Item	Frequency	Percentage
Lack of current materials and updates	9	69.2
Inadequate library skills	2	15.4
Communication barrier	1	7.7
Non-response	1	7.7
Totals	**13**	**100**

Prospects of Using ICTs to Serve the Farmer Clientele

The Executive and the Management Boards of the respective libraries in Embu County should seize the opportunities brought about by devolution to transform their library services. For example, KNLS is mandated to play the role of both a national as well as a public library. Because of this dual role, its management must

ensure that all categories of its clientele – literacy levels not withstanding – are well nurtured in terms of information resources. KNLS should spearhead the collection, preservation and use of the indigenous agricultural knowledge and cultural values. In addition, KNLS and other libraries and documentation centres should spread out in the county so as to bring services nearer to the community.

The Kenya Agricultural and Livestock Research Organisation (KALRO) Embu Regional Centre library and KNLS should be incorporated in the County's integrated development agenda as the key providers of information and information resources.

KALRO, KNLS and University of Embu can combine efforts and come up with a framework for the development of requisite agricultural information resources within the county.In this regard, Embu County Government should be encouraged to build community libraries in the villages so that services can be brought closer to the farmers and their respective families.

KNLS would then manage the new libraries because it is within its statutory mandate to promote the development of libraries. The community libraries would also be the ideal places to host telecentres for use by farmers.

The farmers'enthusiasm about using internet connected village information telecentres shows great potential for the future of ICT-based services in the county. It is encouraging to note from the main study that farmers expressed strong willingness to use such a service even at a cost particularly where it is located in close proximity. This attitude came out quite clearly during the FGDs.

Usefulness of ICTs

The librarians were asked to give their personal opinion on the usefulness of ICTs as tools for agricultural information communication within the farming community. They all answered in the affirmative.

Table 8 below shows the details, thus; 38.5% felt that they would give easy access to information, 23.1% felt that the information would be sharable and would therefore reach many farmers, 23.1% noted that the ICTs would provide suitable and up-to-date information, while 15.4% felt that ICTs would be easy to implement and retain presumably because information can be replicated.

Table8. *Librarians: Why ICT is useful. N=13*

Item	Frequency	Percentage
Reach more farmers	3	23.1
Easy to implement and retain	2	15.4
Suitable and up-to-date information	3	23.1
Easy access to information	5	38.5
Totals	**13**	**100**

Availability of ICT Infrastructure

The librarians were asked to list the ICT infrastructure and facilities available in their respective libraries if any. The purpose was to assess the respondents' awareness of ICTs. The results are indicated in table 9 below; 84.6% listed the internet, 53.8% listed the TV, 38.5% listed video and audio CDs and DVDs, 23.1% listed cyber cafés and 7.7% listed cell phones.

Table9. *Librarians: ICTs infrastructure Available*

Item	Frequency	Percentage
Internet	11	84.6
Television	7	53.8
Video, Audio CDs and DVDs	5	38.5
Cyber Cafés	3	23.1
Cell phones	1	7.7

Telecentres for Enhancement of Farming Activities

The librarians were asked to give their personal opinion as to whether ICT-based agricultural community information centres (telecentres) would enhance farming activities in the rural areas. From the findings a total of 92.3% replied in the affirmative while 7.7% replied in the negative. The librarians were further asked to state why they felt that telecentres would be useful in enhancing farming activities in Embu County.

38.5% noted that initiating telecentres would reduce transport costs and also save time, 38.5% said that farmers would gain more knowledge, 30.8% noted that telecentres would bring new agricultural activities, and 30.8% noted that telecentres would provide information accessibility.

Problems and Prospects of Agricultural Information Accessibility and Use

The librarians listed various problems that hinder access to information by the Embu

farming community. Majority, 38.5% of the librarians cited illiteracy and ignorance as the main problem.

Impediments of Agricultural Information Accessibility and Use

The librarians were asked to state their views on the problems and prospects of accessibility and use of agricultural information by the farming community in Embu County. The main responses were as follows; 38.5% indicated illiteracy and ignorance, 30.8% indicated poor information infrastructure, 23.1% indicated inadequate facilitators and information materials, 15.4% indicated poverty, 15.4% indicated Market unavailability, 15.4% Poor product prices, and 15.4% lack of information centres.

See table 10below for the other listed findings.

Table10. *Librarians Explanation on: Impediments of Agricultural Information Accessibility. N=13*

Item	Frequency	Percentage
Limited finances	1	7.7
Inadequate skills	1	7.7
Inadequate facilitators and information materials	3	23.1
Poverty	2	15.4
Poor information infrastructure	4	30.8
Illiteracy and ignorance	5	38.5
Vast distance	1	7.7
Market unavailability	2	15.4
Poor product prices	2	15.4
Lack of focal groups	1	7.7
Lack of information centres	2	15.4

Suggestions on Current Agricultural Information Infrastructure

Librariansgave their suggestions on accessibility and use of agricultural information by farmers in Embu County. From the findings, 38.5% of the information professionals felt that there is need to set up telecentres while 30.8% felt libraries needed to be re-stocked with current and appropriate agricultural information resources specifically relevant to farmers' needs. They further suggested that there is need for:

- Extension personnel to be trained on ICT skills.
- Communication infrastructures such as roads to be improved.
- Aggressive rural electrification so that many people can access the internet and also charge their mobile phones for ease of communication.
- Promotion and marketing of the various information services.
- The government to develop strategies for the equipment and promotion of the ICT-based telecentres

Farmers' Degree of Information Literacy

Librarians' response to the question on the farmers' degree of information literacy shows that46.2% indicated that farmers need to be given regular workshops on how to identify and meet their respective information needs, 38.5% cited the need to provide up-to-date information resources for farmers' use, 38.5% cited the need to equip the field extension officers with ICT skills while 30.8% indicated that there is need for information awareness campaigns for farmers.

Government Policies and Plans

The librarians were asked about the government policies and plans on the agricultural information availability, accessibility and use by the farming community in Embu County, in line with the Vision 2030.

Table11. *Librarians:Government Policies*

Item	Frequency	Percentage
Equip telecentres with necessary resources	8	61.5
Development of new technologies	1	7.7
Reduction of training costs	1	7.7
Improve road networks	2	15.4
Exercise price controls	2	15.4
Provision of cheap fertilisers and pesticides	1	7.7
Continuous training of farmers	1	7.7
Promotion of farmers' cooperatives	2	15.4
Look for lucrative markets	4	30.8
Speed up agricultural reforms	2	15.4

The main responses are indicated in table 11 as follows; 61.5% recommended that the telecentres, when founded, be equipped with the necessary information resources, 30.8% recommended that the government should identify appropriate markets for agricultural produce, 15.4% recommended that the government should improve the road networks, 15.4% recommended that the government should exercise price control on farm produce, 15.4% recommended that there should be more promotion of farmers cooperatives, 15.4% recommended that agricultural reforms be speeded up.

CONCLUSION

The growth of Kenya's economy remains resilient but there are significant unexploited opportunities that would support a stronger and inclusive growth. Over the years, the structure of the economy has remained more or less the same with agriculture as the key contributing sector while manufacturing sector contribution has declined. Exploiting the growth potential for the economy would require diversifying the sources of growth to cushion the economy from exogenous shocks (KIPPRA, 2017). One key ingredient in diversification process is pertinent information and or knowledge on how to handle every facet of the growing economy. In this regard therefore, leveraging on agricultural information, knowledge and technical knowhow is not an option but a must if this crucial sector (agriculture) of the economy is to blossom and optimally flourish.

Agriculture has a strong multiplier effect because of its impact on rural income, demand and its supply of raw materials to several industrial sectors (Singh, 2018). Kenyan Information professionals in the rural areas, regardless of the type of information service they offer, may have to consider creating a special place (digital and or physical) for agricultural information resources as a an outreach service to the rural farming community.

Leveraging on agricultural information and knowledge is a must for sustainable food security and poverty alleviation. Further to this, creation of telecentres or one stop shop within the farmers'reach is of vital. Islam & Hasan (2009) refers to telecentres in Bangladesh has multipurpose community information and knowledge centers (MCTs).When commenting on academic librarians, Stowell (2017) explicates that librarian liaisons to the agricultural sciences offer many traditional services, such as teaching classes, purchasing materials, managing collections, and providing guidance on scholarly communication issues.

However, Stowell (2017) further explicates that data management and data literacy instruction are two emerging service opportunities for agricultural librarians to develop new roles and work with researchers to set standards and meet data management needs within the disciplinary context.

The findings in this study show that the officers engaged to run the agricultural institutional based libraries in Embu County are actually library para –professionals with basic library skills. They are therefore not qualified to provide articulate information services to the agricultural technical staff, neither are they capable of offering advisory services to the farmers directly. However, they are playing the old aged role of library custodiansas opposed to the 21st century information and knowledge delivery.

This paper recommends that local Institutional based agricultural libraries such as the one in KARLO regional centre and University of Embu, formerly Embu Agricultural Staff Training (EAST) College engage subject librarians, that is, those who have first degree in agricultural science and a postgraduate degree in information Science. As for the Embu University which is now multifaceted in subject areas or faculties, the management should consider recruiting subject based information scientists who can adequately handle the information needs of their respective subject areas including agricultural science. The same staff would be used by the university to offer outreach information service to the farming community.

All the other public, government and community library and information centres covered in this study may consider setting up special collections (with all formats of information resources) where farmers and any other agriculturist could be served regardless of their information literacy skills. This therefore calls for the government and other partners of good will to finance recruitment of agricultural subject information scientists who can ably handle the day to day agricultural enquiriesfor each library. In addition, the libraries would have to be re-in stocked with all pertinent agricultural information resources for all levels as well as the hardware and software for

information processing, retrieval and delivery. The same libraries would have to liaise with Agricultural Information Resource Centre (AIRC) for free abridged information resources-pamplets, charts and CDs and films on basic farming techniques. This kind of open access collection would serve the extension personnel as they carry out their day to day duties in serving the farmers. Both Literate and illiterate farmers would be able to access the collection or have their Frequently Asked Questions (FAQs) answered via mobile phones service.

The farmers in this study showed some enthusiasm in having telecentres with all possible answers to their day to day queries as well as prompt referral services to expert service. However, the farmers insinuated that libraries are located very far from their neighborhoods and that they were not within their social realm.

Although this paper recommends the establishment of appropriate telecentres in each village, all the libraries in the county could organize to carry out some form of outreach programmes by establishing and marketing special agricultural information resource collections for the farmers.

RECOMMENDATIONS

- Co-ordination and strong linkage of all library and information services within Embu County with a clear and purposive aim of playing their part in the agricultural information, knowledge and technology transfer
- Improvement on the top down linear information, knowledge and technology flow from the research scientists, to extension agents and finally to farmers. Reverse flow from the farmer, to the researcher need to be encouraged with the extension agents and the information professionals playing their intermediary role of dissemination as well as using an organized feedback mechanism.
- The County government needs to encourage and financially support strong linkage between research, education, extension, farmer and other stakeholders so as to improve the performance of the agricultural system.
- Library and Information systems need to take advantage of the AIRC's packaged and free information and technologies so as to meet the needs of both the extension agents and the farmers in order to achieve higher productivity.
- The county information professionals need to ensure that all farmers' indigenous knowledge is identified and recorded for posterity and further research.

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