

Realigning Library and Information services and extension services to sustain agricultural information services in Zimbabwe: Case of urban farming

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Abstract

Globally the key role of agricultural information services cannot be underestimated because agriculture and food production are key facets of inclusive development. Farmers have dynamic and intricate information needs that can be fulfilled through well coordinated agricultural information services premised on appropriate modern technologies. The world over, access to agricultural information through modern technology has become the epicenter of all facets of the national economy and the struggle for sustainable development. Agriculture is the mainstay of Zimbabwe's economy but however its success is premised on a number of factors chief among them being access to timeous and accurate information. The paper will explore information services that agricultural libraries provide to extension officers, for example, provision of information on prevention and cure of plants, animal's diseases, training, crop assessment and farm management among others. It will further explore the challenges and opportunities that agricultural libraries face in providing for the information needs of farmers in

urban areas. It will examine agricultural libraries and extension services nexus in the context of Information and Communication Technologies (ICT's).The writers will explore the critical role of libraries in promoting access to agricultural information in print and electronic format. Furthermore, the paper will highlight how agricultural libraries can strengthen agricultural extension through utilization of innovative strategies like m-technologies. It will also suggest strategies to realign agricultural libraries and extension services to provide for sustainable development in agriculture. The paper will also look at how the use and optimization of information can lead to better crop, animal and land management. The writers will look at how to get information to urban farmers as a measure to ensure higher yields. It will also do an investigation of the link between agricultural extension libraries and urban farmers. The writers strongly believe in the immense potential of agricultural extension libraries in changing urban farming directly and indirectly. Agricultural extension libraries can help in the sustainable development of urban farmers whose crop yields can benefit many a households and livelihoods. Crucially, the paper will establish the overarching importance of agricultural extension information for sustainable agriculture development. The paper will also look at ways of developing linkages between agricultural extension libraries and urban farmers. Access to agricultural information has been the major driving force of development in agriculture and the paper will look at how dissemination can be enhanced so as to meet the informational need of urban farmers. M-technologies have had a profound and cumulative effect on sustainable development hence their correct and consistent use will give positive results.

1.1 Introduction

The general food sustainability of a nation is largely determined by that nation ability to produce its own food for the well being of its citizens and benefit from surplus production. Sustainable food should be produced, processed and traded in a way that enhances the viability of economies and sustainability of livelihoods, protecting bio-diversity, and providing for healthy and safe products (FAO, 1988). Agriculture is key frontier in the drive towards sustainable green economies. Farmers are key to green economies because they interact with everything found on water and land. Urban agriculture has been in existence since antiquity and its role in ensuring a reliable food supply for urban residents is greatly documented by historians, archaeologists and palaeontologist. Fan (2008) and Thirtle *et. al* (2003)state that the success of agriculture is underpinned by access to research-based knowledge relating to viable agricultural practices and market opportunities among others. The authors correlate Research Development and Diffusion (RDD) and increase in agriculture growth and poverty reduction. The role of libraries

in providing access to agricultural information is central to the realization of sustainable development goals (SDGs).

The oases of the Sahara provide a clear example of intensive (urban-like) agriculture, making efficient use of wastewater and solid waste as an agricultural input. Smit, Nasr, and Ratta, (2001) opine that ancient civilizations developed urban agriculture systems and devised numerous innovative ways to produce food and manage land, water, and other resources efficiently. Examples of such civilisations include developments in ancient Egypt, West Africa, Iran, Java, Mexico, and Southern and Central Africa among others. The authors further state that animal and crop husbandry in ancient cities of the world, sustained food requirements of local communities and also contributed to the growth of local economy through various economic activities including internal and external trading networks. Agriculture has contributed to the development of empires and modern societies as will be highlighted in the next section.

Generally farming has been viewed as a rural occupation and cities as consumers of rural foodstuffs (Mbiba, 2000; Kisner, 2008; Sedze, 2006). Urban farming has challenged this dialectical relationship as evidenced by increasing number of citizens involved in agriculture. Fertile lands coupled with good rains are major ingredients in the development of a viable and vibrant agricultural society. These developments led to the growth of bigger cities in the modern world. Urban farming complements food requirements for the largely working class urbanites in developing countries and Zimbabwe is not an exception. The benefits of urban agriculture include; enhanced household food security, self reliance in people use their produce for their food requirements and offer some people something to do. According to Zimbabwe's 2012 Census Report, it was reported that the rural areas have a population of over 67% percent, while the remainder are based in urban areas. It is in the rural areas that a natural, if not in-born need to practice agriculture is developed. Zimbabwe's 2012 Census report also alludes to a high rural to urban migration and farming skills and knowledge are transferred and shared. Zimbabwe has got a lot of arable land. Sedze (2006) states that urban agriculture has grown from 8% of the land

in the city in 1990 to above 25% after 2001. The major cities and its environs [map of cities environs] provide plenty of land on which, urban dwellers can do agriculture. Though the cities by-laws prohibit farming in those lands there is always an endless debate on such critical issues because of the dire need for people to farm to support livelihoods.

1.2 Definition of Urban Agriculture

The UN-FAO has designated urban farming to be one of the major contributors to nutrition in developing countries and has thus sought to support such endeavors. It estimates that worldwide there are over 800 million households that practice urban agriculture according to Smit *et al.* (1996). Urban agriculture can be defined shortly as the growing of plants and the raising of animals within and around cities. In Sub-Saharan Africa, most of the modern cities have a pre-colonial history of practising urban agriculture. The current cities were developed by colonial masters who encouraged agricultural farming on the periphery to provide for the food needs of those in urban areas. The twentieth century saw the development of formal cities and peripheralised urban agricultural farming. Other innovative features of current urban farming include road-side farming and domestic farming, for example, farming on plots. The most striking feature of urban agriculture, which distinguishes it from rural agriculture, is that it is integrated into the urban economic and ecological system: urban agriculture is embedded in - and interacting with- the urban ecosystem. The United Nations defines urban Agriculture as “an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock”. (Smit *et al.* 1996).

1.3 Research Questions

The research was guided by the following research questions;

1.3.1 Main Research question

- What is the role of libraries in supporting urban agriculture?

1.3.2 Subsidiary research questions

- What are the advantages of urban agriculture?
- How adequate are libraries equipped to support e-agriculture?
- What are the challenges faced by urban agricultural farmers?
- What can be done to realign libraries and extension services to support urban agriculture?
- How can government supports urban agriculture?

1.4 Methodology

The study was conducted in Harare's urban areas. The researchers used a survey methodology to assess the pattern of urban agricultural activities in Harare. The study is a qualitative study to generate descriptive data. The researchers made use of interview schedules and observations as data collection instruments. Urban Harare is the research site and the target population and the target population comprised of urban farmers, librarians and Library and Information Science training institutions. The researchers used purposive sampling to study urban farming in Harare.

1.5 Literature review

Mougeut, (2000) further elaborates on the critical role of urban agriculture in supporting development as underscored in the following quotation “an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock.” Creating capacity for urban farmers to increase their yield in order to derive maximum benefit from their labours is of utmost importance. However urban farmers have to grapple with many challenges including lack of access to relevant information and local government by-laws as will be highlighted in the next section.

Ngena(2012) states that urban dwellers risk transgress council by-laws when they decide to exploit any piece of arable land to grow crops to sustain livelihoods .The author states that urban farming has attracted its fair of bad publicity with such headlines as “ Urban farmers defy council order”, (Herald , January, 2007) or “Urban farmers face tough times ahead”, (Herald , December, 2009) . The government can support urban farmers in a varied ways, for example, provision of extension services and access to information. Gwyn and Jones (2010) views agricultural extension as a significant social innovation and an important and dynamic force in agricultural change. It is through extension services that farmers are able to adapt innovative approaches to agriculture. Agricultural demonstrators and agricultural extension services can be focused on this group of farmers. Mobile Technologies (M-Tech) play an ever increasing role in our day to lives and can thus be used to enable the farmers to derive maximum

benefit. Nyathi (2011) posits that communities can leverage m-technologies for economic and social transformation thereby, deriving maximum benefit in their agriculture endeavor.

1.5.1 Advantages of Urban Farming

Urban farming addresses the key question of food security and nutrition in urban areas. The contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food, stratospheric or astronomical rise in the cost of food coupled with the lack of purchasing power. Urban food security is often contingent on urban agriculture, particularly for millions of urban poor who depend heavily on cash for procuring food (Smit, Nasr and Ratta 2001). It has become particularly important in the maintenance of nutrition in mostly urban families. Smit, Nasr and Ratta 2001 also alluded to the significant of urban agriculture to urban food security through complementing food supplies from rural areas. This is critical in situations where economic or political factors (war, civil strife) cause disruption to food supplies. Benefits that can be accrued from the urban agriculture are wide and varied, for example, it provides source of livelihood and employment as well as contributing to the growth national product. Working with plants and animals in the outdoors contributes to the mental health and outlook and personal wellness of individuals (Brown et.al 2004). Home gardening and nutrition education has been shown to boost micro-nutrient intake in most countries and can be considered as a necessity (Bellows and Smit 2003). Urban agriculture contributes to the general upliftment in the nutrition of the urbanites. It also has the potential to improve the greenness in a city in three ways: it can improve the local economy, energy efficiency, and decrease the amount of vacant lots (Lambarch: 2007) Urban agriculture is an

important part of developing sustainable agriculture and sustainable food systems. Power (1999) posits that urban agriculture can be classified as a movement that provides a sustainable food systems approach to food security, which is also known as community food security (CFS). The advantages also include the eco-friendly system of agriculture and a benefit to the self that is the therapeutic feeling it gives to the practitioners as builders of a progressive green economy. The impact of urban farming on ordinary lives has been immense to say the least and has been profound to overstate the obvious. These urban farmers have a need for information to increase their yields so as to boost the national granary status. Information needs are a *raison d'être* for the existence of libraries and information centers. The major challenge is getting the information to the farmers as it were. Information Communication Technologies have come at an opportune time.

Extension services have been over the years limited to farming or rural communities. However, due to the influx of the urban farmers who have taken advantage of the land reform and have accommodated the urban and peri-urban farms/lands, extension services must reach everyone. Libraries must complement the role of extension workers and go the extra mile to give information to the urban farmers who must get information to increase yield. Thus the onus is placed on the libraries to utilize the m-tech to create Modern Libraries that must cater to the needs of the urban farmers. The majority of urban farmers only practice their agriculture on what they have learnt when growing up. They lack the prerequisite skills to manage a complex agricultural concern.

1.5.2 Challenges faced by Urban Farmers

The potential of the urban agriculture is unbound. However, there are challenges that hamper a transformational yield. Access to information is one of the major challenges. Agricultural research and extension organisations and other support organisations (i.e. credit institutions) have - until recently - given relatively little attention to agriculture in the urban environment. This includes the lack of informational support about soil structure, various seed varieties and better farming methods. Other challenges have to do with land on which farming activities are practiced. Furthermore urban farmers have to grapple with local government by laws and policies which are against haphazard farming. These by laws outline designated areas, special consent areas, council farms, and unauthorized agricultural activities, for example, stream-bank cultivation. However, all these challenges are underpinned by access to Information to such legal instruments. Citizens have a right to be informed on economic opportunities they can benefit from. Pienaar (1995) views community information services as critical in promoting inclusive development through empowering citizens with access to reliable information. The author highlighted the need for public libraries to support access to information through developing robust information services meant to empower citizens.

Some challenges, because of the income status of urban farmers, have to do with the lack of financial resources. That lack of reliable data on and about weather patterns from the meteorological department. Libraries have an obligation to provide for information where and when it is needed. A strategic link between agricultural extension services and libraries can help fully the farmer to better sustain agricultural information services. The key feature is how to get information to the farmers.

1.5.3 Nexus between Libraries and Extension officers

Extension officers have been in existence providing for support in better farming methods. They have been credited for some of the bumper harvest that communities in rural areas get at the end of the cropping season. Extension services are the link between farmers, policy makers and other key stakeholders according to Lawal, Oladokun and Kalusopa(2015) Agricultural libraries have provided for informational support for farmers. They have acted as reference libraries and farmers who had a need for information will visit the libraries. However, because of the creation of new technologies and the evolution of user oriented services, libraries and extension workers can unite for a common good. The use of M-tech can better enhance service provision to the urban farmer through access to agricultural applications. The success of urban agricultural should be buttressed realigning libraries, technology and extension services.

Agricultural extension is critical component of agricultural development according to Aina, (1988). The author describes the major duty of agricultural extension workers as the provision of agricultural information to farmers, thereby assisting farmers in increasing their production. Access to information permeates all development programmes and this is why this paper advocates for the strengthening of the link between libraries and agricultural extension services to improve productivity.

Fairbairn and Lipeikaite (2014:11) states that in urban areas, libraries that pride free access to ICTs among other services help helping people find jobs, thereby increasing individual and family income. The authors further note that provision of information relating to more effective farming methods, connecting farmers to markets and subsidy opportunities, and training farmers to use ICT, public libraries are helping rural communities to flourish.

Furthermore, agricultural libraries can effectively utilise ICT infrastructure to provide access to agricultural information through the internet and mobile services platforms, for example. Ecofarmer, iCow and Esoko e-platforms.

Taking a leaf from Mchombu theory of barefoot librarianship where the information needs of urban farmers are to be taken directly to the users, but utilizing m-technologies. Cellular phones and other mobile gadgets can be tools that can be used for farmers to access information services. Libraries can take advantage of the mass messaging platforms provided for by Mobile Phone Companies. This they can use to give information on the weather patterns, soil or land types, and chemicals to use, farming methods, how and when to plant. An already existing symbiotic relationship between libraries and extension officers exist. Rich agriculture knowledge can be tapped from the library and the officers. There is a need to get the knowledge to the end user who is the farmer. Selective dissemination of information has become a specialty for libraries. This has been a skill that they have specifically honed to satisfy users expectations. A delink between the extension officers and farmers has been prevalent as they have been accused of not being mobile and visible. With this reason they have been to a larger extent been accused of being nonexistent. Uganneya, Ape and Ugbagir (2013) states that agricultural research libraries remain societal mechanisms designed essentially for the provision of needed information services and resources for high quality agricultural productivity. The authors view such institutions as special vehicles mandated to provide information services for study and research activities to enhance the provision of prompt solution to farmers practical problem and raise farmers output, income and accelerate the drive toward national food security

Libraries support agricultural research through facilitating access to information, products and services to researchers, scientists, and policy makers according to (Mangstl (in Rhoe, Oboh and Shelton, 2010:2). Mugwisi(2014) found out that agricultural libraries in Zimbabwe were generally not adequately equipped to support the information needs of researchers and extension workers. The major challenge related to lack of interoperable data and metadata standards to facilitate information wider access according to Mugwisi (2014). The author recommended that access to agricultural can be maximised through encouraging research institutes and other users to make optimum use of the TEEAL and AGORA databases. Libraries are central in enhancing agricultural production through providing access to information on training opportunities, providing linkages between farmers and agricultural extension services. Through the provision of information literacy programmes users can make intelligence use of the wide array of agricultural information available online.

1.6 Findings

- Currently libraries are not providing optimum support to ordinary urban farmers with the exception academic libraries that support education, learning and research in agriculture.
- Libraries do not have adequate ICT infrastructure to enable them to play a crucial role in supporting urban farming through utilising modern ICTs to provide access to agricultural farmers. Such technology would enable libraries to provide free access to ICTs, technology, education and training, and access to current reading material on agriculture.
- Libraries are characterised by an elitist, anachronistic image and failure to descend from ivory towers of exclusivity and realign services in support of agriculture is lacking.
- Urban farming has the potential to contribute towards sustainable development through supplementing food and nutrition.

- In Zimbabwe, because of the agricultural revolution undertaken by the government, there is an enabling environment on which the citizenry can participate in the agricultural revolution through exploiting arable land in both urban and rural areas.
- There is lack of coordination and cooperation between libraries, agricultural extension and research workers (AREX) in urban areas;
- There are more libraries in urban areas that can be leveraged to support urban farmers. These include public or community and academic libraries in Universities and colleges
- The study indicated that the land reform after independence was necessary to address colonial socio-economic imbalances.
- Respondents indicated that the post independence dispensation has widened their opportunities to engage in agriculture for subsistence and commercial purposes.
- The growth of the informal sector makes it imperative for policy makers to create more opportunities for urban farming as a supplement to food requirements
- The researchers observed that urban Agriculture in Zimbabwe encompasses the small to large scale agricultural activities; for example, small gardens, roadside farming, open space, plots , home gardens
- Urban farming contributes to the livelihood of urban farmers through providing for food and nutrition.
- Urban agriculture is practiced through market gardens, residential stands, gardens in schools and Universities and colleges and community supported farming.
- The National ICT Policy (2015) acknowledges the critical role of ICTs in the agricultural sector in enhancing the growth of the economy that is largely anchored on agriculture. The policy recognizes that e-technologies will contribute towards food security at

national and household levels, beneficiation of agricultural produce, effective land management and creation of national wealth. The policy calls on government to support e-agriculture with respect to land and water utilization.

1.7 Recommendation

- Realignment of libraries and agricultural extension services should be premised on the following points;
 - I. Adapting new perspectives for cooperation;
 - II. Making the libraries strategic to social and economic development ; and
 - III. Increasing, widening and deepening competencies of LIS with respect to ICTs and e-agriculture.
- Libraries should look beyond traditional library services centered on brick and mortar edifices but instead take advantage of technology to create network that transcend space and time or history and geography.
- Libraries should embrace the culture of continuous change in order to meet the growing needs of users with reference to urban farmers.
- Libraries need to reprofile and reposition their services in support of urban agriculture.
- Libraries should create social physical and virtual spaces for farmers to access agricultural information.
- Regularization of this sector will transform livelihoods for the better.

1.8 Conclusion

Urban agriculture is not a fly-by-night phenomenon. It will remain with all the urban dwellers for as long as there is land to farm. If correctly done it will give food security an impetus that is revolutionary. The lure of urban life will continue to dazzle and lure young people to the cities thereby heavily populating the cities and towns. Food security, which is the major advantage of urban agriculture, will need to be brought up to support the ever increasing population. Urban agriculture to a large extent complements rural agriculture and increases the efficiency of the national food system in that it (IDRC 1998) provides products that rural agriculture cannot supply easily (e.g. perishable products, products that require rapid delivery upon harvest), that can substitute for food imports and can release rural lands for export production of commodities.

The sustainability of urban agriculture is closely related to its contributions to the development of a sustainable and resilient city that is socially inclusive, food-secure, productive and environmentally-healthy. Agricultural libraries should take advantage of the ICT opportunities. They should enable users to take advantage of the portal such as AGRIS, AGORA, TEAL and other platforms that promote access to linked open data technologies. Celli et al. emphasized the importance of semantic web technologies in facilitating access to linked open data (LOD) with reference to agricultural information. Urban agriculture has proved to be sustainable .Urban Agriculture is sustainable because it is a free market response to food safety aimed at reducing at reducing unemployment and underemployment. It stimulates and accelerates entrepreneurial activities in underrepresented populations and addresses nutrition needs of urban residents who may be living near or below poverty level according to McGuinness, Mahfood and Hoff(2004). The library as a cultural, educational, recreational and informational entity can justify its

existence by realigning its services with agricultural extension workers and other stakeholders to promote sustainable urban agriculture through innovation and creativity.

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