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RESEARCH ARTICLE

DIGITAL INITIATIVE FOR FARMERS: REBOOTING PUBLIC LIBRARIES

Dr. Deepak Kumar Shrivastava[1] and Shuaibu Danbaba[2]

1. Head & Divisional Librarian Government Divisional Public Library Kota Rajasthan India.
2. PhD Research Scholar Carrier Point University Kota Rajasthan India.

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Abstract

This paper is all about the public library digital initiative for farmers with much emphasis onthe concept of digital library, digital library services, advantages of digital library, disadvantages of digital library, use of digital library, digital technologies in agriculture and rural area, condition for digital transformation, challenges, conclusion and recommendations.It was found that Public Libraries so far done nothing for the farmers who have been potential users of Public Libraries. Library timings do not suit the farmers. So, Public Libraries should take immediate initiatives to reboot its importance among the rural communities. Public Library should plan to start to provide above mentioned services without any delay. In addition to these services some new and innovative technology-based services like, Computer literacy for farmers, Webinars for farmers, SMS alert on new issues like crop diseases and plant protection in local language etc., should be started.

Introduction:-

The agriculture and food sector are facing multiple challenges. With the global population projected to grow from 7.6 billion in 2019 (UN DESA, 2020) to over 9.8 billion in 2050 there will be a significant increase in the demand for food (UN DESA, 2019). At the same time, the availability of natural resources such as fresh water and productive arable land and information respectively is becoming increasingly constrained. Production is not the only concern; although agricultural output is currently enough to feed the world, 821 million people still suffer from hunger (FAO, 2020). Processes such as the rapid rate of urbanization are also having important implications for patterns of food production and consumption.

Corresponding Author:- Dr. Deepak Kumar Shrivastava
Address**:-** Head & Divisional Librarian Government Divisional Public Library Kota Rajasthan India.

Public Libraries Supporting Farmers

Photo Courtesy: Google Images

Figure 1:- A farmers' group leader discusses information found on the internet with women farmers at Bwera Information Centre in Uganda.

The agrifood sector remains critical for livelihoods and employment. There are more than 570 million smallholder farms worldwide (Lowder et al., 2019) and agriculture and food production accounts for 28% of the entire global workforce (ILOSTAT, 2020). Achieving the UN Sustainable Development Goal of a 'world with zero hunger' by 2030 will require more productive, efficient, sustainable, inclusive, transparent and resilient food systems (FAO, 2021 p. 140). This will require an urgent transformation of the current agrifood system. Digital innovations and technologies may be part of the solution. The so-called 'Fourth Industrial Revolution' (Industry 4.0)1 is seeing several sectors rapidly transformed by 'disruptive' digital technologies such as Blockchain, Internet of Things, Artificial Intelligence and Immerse Reality.

It is of vital importance that in each community there is a place where people gather, exchange information and learn. Such centres should be libraries

Concept Digital Library:

Digital libraries summarize different aspects hence cannot be explained in a simple definition. Many authors, researchers and organizations tried to define digital libraries that reflect their basic nature and characteristics. Some of the definitions given by the authors are given below. According to Gladney H.M, et.al.(2001) " A digital library service is an assemblage of digital computing, storage, and communications machinery together with the software needed to reproduce, emulate and extend services provided by conventional libraries based on paper and other material means of collecting, storing, cataloguing, finding and disseminating information. Edward A.

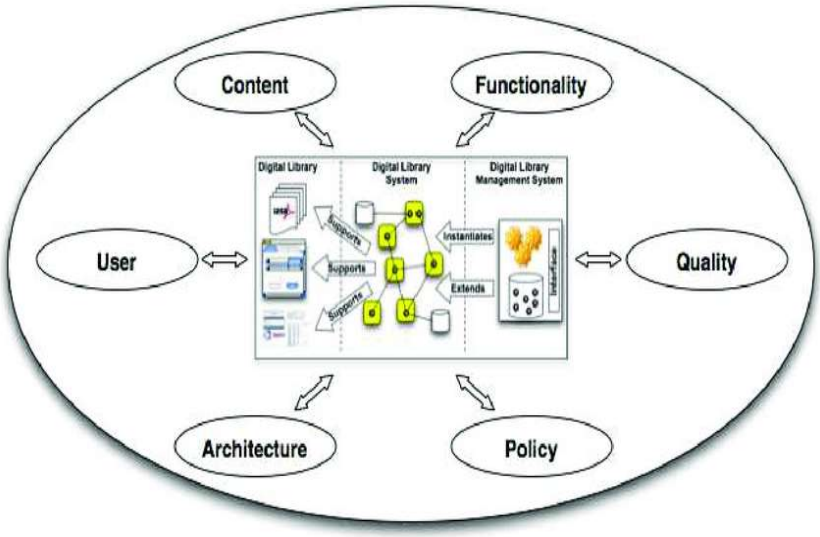

Figure 2:- Concept of Digital Library.

Fox defined the term "digital library is a machine readable representation of materials which might be found in a university library together with organizing information intended to help users find specific information. A digital library service is an assemblage of digital computing, storage, and communicating machinery together with the software needed to reprise, emulate, and extend the services provided by conventional libraries based on paper and other material means of collecting, storing, cataloging, finding, and disseminating information." Paul Duguid (1997) has defined the digital library as an environment to bring together in support of life cycle of information in addition to digital collection and information management tools. According to William Saffady digital library "is a library that maintains all, or a substantial part, of its collection in computer-processible form as an alternative, supplement, or complement to the conventional printed and microfilm materials that currently dominate library collections" Stella Keenan "Digital library which looks and feels like a paper-based library but where items have been stored in digital form and stored for access in a networked environment which can be used by users in remote locations". IFLA/UNESCO Manifesto stated that "A digital library is an online collection of digital objects, of assured quality, that are created or collected and managed according to internationally accepted principles for collection development and made accessible in a coherent and sustainable manner, supported by services necessary to allow users to retrieve and exploit the resources."

Digital Library Services

Digital library provides a wide array of services to its user community making them more widely available. The following services offered by the digital library: • Internet service • Selective dissemination of Information service (SDI) • Current awareness service (CAS) • Externally-Internally purchased database • CD ROM database service • Document delivery service • Interlibrary loan and union catalogues service • Catalogue database service • E-mail service • Netnews system service • E-books service • E-Journals Service • Photocopying Service • Translation Service • DVD-ROM database service etc.

Advantages Of Digital Library

The main advantage of the Digital library as indicated below:

Digital libraries make use of most up-to-date information technologies to store enormous amounts of information in digitized form, it helps in resource sharing and inter-library Loan between the libraries, it provides quick services to users for searching the needed information, it saves funds, time and manpower, it reduced the repetition and duplication of new information, users will get needed information with minimum time in across the world, OPAC through internet gives access to bibliographic records of books, e-journals, and research articles, details of holdings of public and research libraries and newsletters.

Disadvantages Of Digital Library

The main Disadvantage of the Digital library as indicated below:

This trend is faced because electronic information is more easily manipulated and reproduced and the identity of the author or changes affected to original data is harder to establish. Changing habits in the arena of learning and teaching, digitized form is difficult when compared to printed form remote access to documents are uncomfortable when compared to spot accesses a disappearance of nascent information in internet.Inadequacy of the libraries to predict the future use of documents, irrespective of its type i.e. printed or digital.Users need to memorize different passwords for different products. Often there is no cost savings, especially when these products are maintained and the cost of hardware, software; leasing communication circuit is generally very high. Access to archive e-files - There are restrictions, which vary from vendor to vendor, on how the product can be used.Lack of knowledge in using to access the required information.

Purpose Of The Study

This study aims at finding the information need of the rural people, especially of the farmers vis-a-vis the condition of the rural libraries to establish whether the rural libraries are in a position to satisfy the information need of the farmers.

Use Of Digital Libraries

Digital libraries offer new dimensions of easy access to their resources. When information sources are in digital form and stored electronically on digital media, they can be used and re-used. They can be retrieved easily to answer an information enquiry. They can be used to create multimedia application or used for resources sharing in either a network environment or for electronic publishing on the Internet, or the World Wide Web (www). As long as the resources are in digital form regardless of whether they are still images, video or sound of on a web server, one can obtain this information almost instantly form anywhere in the world. The use of multimedia and the knowledge of the navigator permit the delivery of national and international Impact of New Technologies in the Digital Libraries Bansode and Shinde JoALS (2021).

Digital Technologies In Agriculture And Rural Areas

Digitalization will change every part of the agri-food chain. Management of resources throughout the system can become highly optimized, individualized, intelligent and anticipatory. It will function in real time in a hyper-connected way, driven by data. Value chains will become traceable and coordinated at the most detailed level whilst different fields, crops and animals can be accurately managed to their own optimal prescriptions. Digital agriculture will create systems that are highly productive, anticipatory and adaptable to changes such as those caused by climate change. This, in turn, could lead to greater food security, profitability and sustainability. In the context of the Sustainable Development Goals, digital agriculture has the potential to deliver economic benefits through increased agricultural productivity, cost efficiency and market opportunities, social and cultural benefits through increased communication and inclusivity and environmental benefits through optimized resource use as well as adaptation to climate change. The potential benefits of digitalizing the agri-food sector are convincing but it will require major transformations of farming systems, rural economies, communities and natural resource management. This will be a challenge and requires a systematic and holistic approach to achieve the full potential benefits.Digital divide Digitalization of the agri-food system involves the risk that the potential benefits will be unequally distributed between rural and urban areas, gender, youth population. Urban areas often have better developed 'digital ecosystems' (resources, skills, networks) compared with rural areas. Combined with global trends of urbanization and middle and rich classes settling in cities, there is potential for digitalization to exacerbate existing ruralurban disparities (UN DESA, 2021) and populations to fall behind in the process of a digital transformation. FAO is committed to assist governments and partners bridging such multidisciplinary digital divides to ensure that everyone benefits from the emerging digital society.

Conditions For Digital Transformation

There are some basic conditions that must exist for the use of digital technologies and therefore for digital transformation of the agriculture and food sector. These include: infrastructure and connectivity (mobile subscriptions, network coverage, internet access, and electricity supply), affordability, educational attainment (literacy, ICT education) and institutional support. Access to digital technology can offer significant advantages to smallholder farmers and other rural business by providing links to suppliers and information and allowing users to tap into workforce talent, build strategic partnership, access support services such as training, finance and legal services and, critically, reach markets and customers. However, the introduction of digital technologies in rural areas can be a challenge. Around the world, rural populations are declining and education and employment opportunities are limited. There is often a lack of infrastructure, including basic IT infrastructure, particularly in very remote rural

communities and those with large indigenous populations. The costs associated with IT infrastructure present a major challenge in rural areas where rates of poverty are often high, especially in developing countries and least-developed countries (LDCs).

Challenges

Globally, mobile cellular subscriptions have been growing over recent years. Between 2013 and 2018 there were 1 billion new mobile subscribers and 67% of the world population is now subscribed to mobile services (GSMA, 2019; 2020). Much of this recent growth has been driven by countries in Africa and Asia and the Pacific. Access to computers and internet has also been increasing in LDCs and developing economies. Yet 3.8 billion people still remain offline and are disproportionately located in rural and remote areas (GSMA, 2019). One challenge is that network coverage in rural areas remains limited. Despite 4G becoming the most common mobile connection globally and 90% of being able to access the internet through 3G or higher quality network, only around a third of rural populations in LDCs receive coverage by 3G networks (GSMA, 2019). Smartphones have become a major way for consumers to access internet. Falling handset prices and innovations such as pay-as-you-go plans mean that mobile devices are increasingly affordable and accessible, including for rural communities (Hahn and Kibora, 2017). Among the world's poorest households, 7 out of 10 have a mobile phone and more households in LDCs (ITU, 2020). However, these are not always web-enabled smartphones. Although the growth of smartphone ownership and use of mobile broadband has been faster in developing countries than developed countries in recent years, there are still twice as many mobile-broadband subscriptions per 100 inhabitants in developed countries as in developing countries (Figure 1). Affordability is the main barrier to smartphone ownership in LDCs where a basic mobile broadband plan still corresponds to over 60% of gross national income per capita on average (ITU, 2021).

Information Need Of The Farmers

Every one of us has four basic needs- air, water, food and shelter. In addition to these we need information. Information need varies from man to man by their professions, the nature of environment they live in, the food habit they have, the society they are the part of etc. The information need of the farmers is very specific. All they need are information relating to agriculture and education and health. The information need of the farmers of the said areas, as recorded by the author from the study is mentioned below.

They need information on:

1. Weather
2. New varieties of crops and their availability
3. New farming technique
4. Best practices in farming
5. Availability of fertilizers and pesticides
6. Govt. Schemes like agricultural loan, subsidies etc.
7. Training and workshops for farmers
8. Market price
9. Scientific use of fertilizers
10. Process of making bio-fertilizers and bio-pesticides
11. Diseases of crops and its preventive measures

Traditional Rural Library Services and the limitations:

Rural libraries get their places in the lowest tire of the public library system in the district. The basic services provided by the rural libraries to the users are lending service, reading room service, service to children, text book and career guidance service and reference service. No specific services for the farmers have been designed so far. Library timing is not for the farmers. They cannot visit libraries before the evening. They do not enjoy holidays. So, the farmers have very little opportunities to go to the libraries to seek information. In rural libraries farmers are not recognized as special group of users that require special attention. Naturally the farmers step into the library occasionally. The few farmers that come to the library mostly have to spend time in reading novel and daily newspaper. These libraries are mostly visited by the old retired person and some students appearing different competitive examinations. So, the rural libraries do not have much importance to the farmers.

Need based Information Services to be provided to the Farmers:

The following services may be provided to the farmers by Rural Libraries-

1. Weather Information:
Weather information is the key information to the farmers because agriculture is weather sensitive. Rural Libraries should take up this responsibility to supply weather information to the farmers on daily basis or three to four days rolling forecast. It may be supplied through SMS alert on mobile devices or it may be announced from a local club, mosque or temple where people gather around.

2. Information on new varieties of seed:
Farmers should have information on new varieties of crops. Generally,this information are available Block Development Office and Block Agriculture Office. Krishi PrayuktiSahayak are responsible to impart this information to the farmers. The farmers do not have much time to go such offices generally located 6 to 10 km away from their villages. Officers form agriculture offices have little scope to visit the villages due to shortage of staff. Furthermore, the farmers have not enough courage to approach the officers to discuss about their needs. These facts should be taken up by the rural libraries as the opportunities to serve the farmers. Rural libraries may contact to such offices for this information and disseminate them to the farmers.

3. Information on new farming technique:
Information on developments of new farming techniques should be reached to the farmers so that they can reap the benefit o it. Marginal farmers come to know about new technologies and techniques very late. So, they remain deprived of the benefits of new developments. Rural libraries should circulate this information to the farmers. Some awareness camp may be organised by the libraries as and when some new techniques are developed by the scientists.

4. Information on scientific use of fertilizers and pesticides:
Green Revolution in 1960s introduced synthetic fertilizers, pesticides and herbicides in the farmer's fields. With the use of such fertilizers and pesticides they get better yields. But they are unaware of the dangers caused to the environment and to the human health. Advisory services for the farmers may be given time to time in collaboration with some agriculture university or NGOs working for the farmers.

5. Information on Govt. Scheme, subsidies, loan etc.:
Both the Central Govt. and the State governments announce different schemes like subsidies and loans for the development of agriculture and rural development. Schemes like Pradhan mantra FasalBima Yojana (PMFBY), National Agricultural Insurance Scheme (NIAS), modified NIAS, Weather Based Crop Insurance Scheme (WBCIS), et., are available for the farmers. Usually, such information is available from Block Development Office, Panchayets and Banks. It is very unfortunate this informationis not disseminated to the farmers who really need it. Public libraries should collect all such information from govt. offices, translate them into local languages and disseminate them to the farmers. All such information will empower the farmers.

6. Information on market price:
Timely and reliable information on the prices of their products will help them get higher profit.

7. Expert advice:
Libraries may organize camps for the farmers to provide expert advice by qualified expert to solve problems and queries relating to crops.

8. Information technology training for farmers:
Public libraries may start ICT training for farmers to make them confident with ICT, encourage for using internet, e-mails and social media where they can share information with other farmers, communicate with buyers, get expert advice etc.

9. Webinars for farmers:
Libraries throughout the district may organize web based seminar (webinar) just before the beginning of each farming season. Experts from different agriculture universities may be invited to answer queries from the farmers. In this interactive programme farmers may ask the agriculture experts on managing soil, irrigation, fertilization, crop production, pest management, best practice in farming, marketing system of their products etc.

Conclusions:-

The digitalization of agriculture will cause a significant shift in farming and food production over the coming years. Potential environmental, economic and social benefits are significant, but there are also associated challenges. Disparities in access to digital technologies and services mean there is a risk of a digital divide. Smallholder famers and others in rural areas are particularly at risk of being left behind, not only in terms of e-literacy and access to digital resources but also in terms of productivity and aspects of economic and social integration. Simply introducing technologies is not enough to generate results. Social, economic and policy systems will need to provide the basic conditions and enablers for digital transformation. The "Law of Disruption" (Downes, 2009) states that technology changes exponentially, but economic and social systems change progressively and have trouble keeping up. Work is especially needed to ensure the necessary conditions for digital transformation are created in rural areas.

Challenges to connect marginalized and remote communities A well-developed digital infrastructure, especially in rural areas, is a precondition for digital agriculture and food systems. Although advances in technology and regulatory reform have improved access to ICT for people around the world, there still exists a digital divide. Just as a certain technology (e.g. dial-up Internet) becomes available across income levels, a new technology (e.g. broadband) appears, leaving users in developing countries 'playing catch up'. Although mobile-cellar subscriptions in the last five years were driven by countries in Africa and Asia and the Pacific, many people still do not own or use a mobile phone and the distribution of ownership is unequal. Access to web-enabled smartphones and fast 3G or 4G internet connections remains particularly limited in rural areas.

I Case of India, Public libraries are in India are still very relevant. It will be an exaggeration if we say that traditional Public Libraries will cease to exist due to proliferation of information technology. In India only 6.15% of people are computer literate. So, what we need to concentrate is the rebooting of Public Libraries. The government should immediately recruit in all the existing vacant position and reconsider the existing staff pattern and allocate reasonable amount of fund. Librarian should have the full power to utilize the fund. All the libraries should be government organization, not government aided or government sponsored. In this era of information technology, the libraries should be equipped with modern tools and techniques. This should be possible only when the government shows the proper and positive attitude towards the library profession.

Recommendation:-

A digital library is imagining as a comprehensive library of the digital resources and services that are available for education in all area of interest and disciplines. It is considered to be a association of library services and collections that function together to create a digital learning community. Digital library should have a variety of models for access to the materials; some content will be free of charge while other materials will be available on a payment basis. Digital library will also facilitate resource sharing of educational resources within an institutional. The digital library provides the opportunity for users at different level to work on joint projects or experiments, perhaps sharing and adding to the same data set and its analysis

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