© UNIVERSAL RESEARCH REPORTS | REFEREED | PEER REVIEWED
ISSN : 2348 - 5612 | Volume : 04 , Issue : 08 | October - December 2017

Transformation Of Agriculture In Rajasthan:- An economic analyses

[1]Chitranjan Kumar Maurya, [2]Pooja Tarun
Research Scholar, Department of Economics, University of Rajasthan, Jaipur-302004
Research Scholar, Department of EAFM, University of Rajasthan, Jaipur-302004

Abstract: The article explores how Indian Agricultural libraries have evolved and transformed in the digital era and how technological advances and increased sophistication of web based tools have enabled libraries to collaborate and share resources. The authors identify various innovative practices adopted by fifty six Indian agricultural libraries and detail the collaborative county-wide programs and digitization projects in progress such as eGranth's AgriCat, a union catalog of books and articles in agriculture and allied sciences. Also described are activities involving digital institutional repositories like KrishiKosh and KrishiPrabha and the establishment of a national level consortium for e-journals and digital content accessible to the Indian academic community. Grants from World Bank-ICAR funded projects like the National Agricultural Innovative Project (NAIP) have boosted digitization in India and have brought libraries and the user community into closer proximity virtually by removing physical boundaries.

Key words:- Agriculture transformation, libraries, internet technology, digital libraries, e-books.

Introduction:-

Tech to transform Rajasthan agriculture landscape: Chief minister Vasundhara Raje world-class technology and innovation with an objective to increase efficiency, reduce costs and ensure sustainability in farming. Raje was speaking at the inaugural session of the 'Global Rajasthan Agritech Meet (GRAM 2016) on Wednesday in Jaipur. The mega event has been jointly organized by state government and Federation of Indian Chambers of Commerce and Industry (FICCI). Raje said that Rajasthan has evolved as a strong investment friendly state. "Just one year of holding the Resurgent Rajasthan Summit 2015, projects valued at almost Rs 5,000 crore have already been implemented and projects worth Rs 54,000 crore and Rs 49,000 crore are under construction and under various stages of clearance, respectively. Excluding the solar energy projects, the total investment is likely to be Rs 1.08 lakh crore. This is one of the fastest and highest conversion rates for any state in the country," she added. Governor Kalyan Singh said that for a smart nation, it is imperative to develop not only smart cities but also smart villages. "Development of road, irrigation, education, electricity, health, security, employment, self-reliance is major tenets which should be focused for developing a smart village," said Singh. He further said that the farmers, industry leaders, scientists and the government will have to join hands together to pave the way for doubling the farmers' income by 2022. He emphasized on increasing per acre productivity to meet the demand of increasing population. Union minister of state for agriculture farmers welfare and panchayati raj, Parshottam Rupala said that Rajasthan is not only competing with other leading states in the field of agriculture but has emerged as a leader in various agriculture products. Yoga Guru, Baba Ramdev during his address announced to set up a mega food park and launching milk products in Rajasthan. He said Rajasthan is working aggressively towards making the state agriculturally strong. He said if given an opportunity, Patanjali is ready to work with the state government in all the agricultural produce of the state, including aloe vera, isabgol, bajra and amla on a buy back arrangement with farmers. "Rajasthan ke

bajre ko toh hum poore desh mei khilangey," he asserted. Minister for agriculture and animal husbandryPrabhu Lal Saini said that GRAM has brought together all stakeholders like farmers, academicians, technologists, agri business companies and policy makers to accelerate development of sustainable agriculture. Major announcements * Setting up of custom hiring centres in all panchayat samitis in co-operation with industry for hiring agriculture machinery through free internet and tool-free telephones In next three years, 2,652 custom hiring centres will be formed. This will generate employment for 13,000 youths *Agri tourism to be promoted in a big way to familiarise the tourists with the rural life of people Help this single mother save her oly daughter*Milaap* Best Collection at Reasonable Prices.*Watches House*

Recommended By Colombia * Subsidy and tax relief to ayurveda healthcare centres under Rajasthan Investment Promotion Scheme 2014 *Herbal plants processing, packing of medicinal/aromatic plants, and minor forest products packaging will get RIPS benefits *Agro processing and agri marketing units registered before March 31, 2019 will be free of conversion charges *Atal Sewa Kendras and e-mitra kioks being converted into knowledge centres with online connectivity. It will provide information on weather, inputs, advisories and prices Stay updated on the go with Times of India News App.

Purpose, Limitations and Methods:-

This study surveyed and analyzed the University libraries and learning resources of fifty six Indian Agricultural university libraries across the country, including Veterinar and Animal sciences. Discussed are the transformation of agricultural libraries in the digital era in terms of faster services and makeovers to revolutionize the functioning of libraries in delivering knowledge, the initiatives and upgrades made from automation activities to

establish e-resources, institutional repositories, digital content management, and consortiums. The latest bibliographical details of universities were collected from the Indian Council of Agricultural Research (ICAR)—www. icar. org. Terms like libraries, information centers and learning resources centers are used interchangeably. Data collected from documentary sources and websites of libraries linked to the agricultural universities were analyzed and evaluated from the period of November 2012 to March 2013 to find examples of facilities created or imple-mented by Indian agricultural libraries using various in-formation and communication technologies. Likewise, e-mails were also forwarded to the library managers to better understand some of the services that were not clearly indicated and explained in their respective home pages.

Drivers of the Transformation of Agriculture and Allied Sectors in the Three Growth Phases:-

The transformation of the Indian agricultural sector has been driven by several factors, in many instances similar to experience worldwide. These include supply side factors such as policies to push growth, better and efficient use of resources like land and labour; introduction of new technology and increased use of modern inputs like chemical fertilisers and expansion of irrigation infrastructure; and, investments in general infrastructure like roads, power as well as demand sidefactors such apopulation, income growth, urbanisation, and demand from the rest of the world through gradual liberalisation of international trade. The specific roles played by these factors have varied during the three phases discussed above.

Phase 1: From TE 1952-53 to TE 1972-73:-

The first phase of transformation of Indian agriculture was mainly driven by the need to achieve self-sufficiency in food grains as India was importing a large quantity of cereals, in particular to meet domestic shortages.6 The area under irrigation was low and there were frequent droughts and the prime

objective at that time was to make adequate food supplies available to the increasing population and ensuring provision of raw materials for the expansion of industrial sector. This wasm sought to be achieved by way of -imports, reorganisation of the agricultural sector, and a series of development measures encompassing expansion of irrigation and extensive as well as intensive farming. These initiatives were given further boost by strengthening agricultural administration and kicking off special area programmes. The advent of new high yielding varieties ushered in Green Revolution, which in combination with expansion in area under cultivation and usage of chemical fertilisers increased the output of cereals mainly – wheat and rice followed by other coarse cereals such as maize to a certain extent. Thus a combination of technological development, significant investments as well as support by the government led to asignificant increase in production of cereals in particular. The gross cropped area during the Phase 1 of transformation expanded by 22 per cent from 134.3 million hectares to 164.4 million hectares and gross irrigated area during the same period increased from 23 million hectares to 39 million hectares, which is an increase of 50 per cent . These developments were coupled with a massive 33 times increase in the usage of fertilisers between TE 1952- 53 and TE 1972-73. There was also a significant increase in the road network in the country and electricity generation also expanded considerably. All this was made possible by a large 113 per cent increase in investment in the agricultural and allied sectors, mainly in public sector because public sector investment in the early 1960s accounted for roughly half the share in total investment. As a result, supplies of cereals and other commodities such as fruits and vegetables increased significantly. On the demand side, during Phase 1 it was mainly the population growth, which added 189 million persons to the population that existed in early 1950s . There was only a marginal shift in urbanisation as the share of rural population in total population decreased marginally from 83 per cent in the early 195os to 80 per cent in the early 1970s. The per capita income also expanded at a comparatively slower rate during this period and there was little in terms of foreign demand because India was only a marginal player in international trade.

Phase 2: From TE 1972-73 to TE 1992-93:-

The second phase of transformation witnessed a play of a combination of expansion of the Green Revolution into new crops and areas and introduction of theWhiteRevolution, which laid the foundations for consolidation of gains made due to the introduction of the Green Revolution in Phase 1 and enormous growth of milk production in the country in Phase 2. The early phase of green revolution was largely associated with the spread of new technology to better endowed regions, therefore, special efforts were then made to spread new technology into those regions, which had remained outside the fold of technological revolution. Consequently, special programmes were launched during late 1970s and mid-1980s. The gross cropped area during this phase of transformation expanded by just about 12 per cent from 164 million hectares to 185 million hectares, but gross irrigated area during this period continued the growth momentum witnessed in Phase 1 and added 27 million hectares to 39 million hectares of irrigation capacity

that existed in the early 1950s. The other factors such as use of fertilisers, road network, and electricity generation also expanded significantly though at a much slower pace than what was observed in the Phase 1. The investment in the agricultural and allied sectors also maintained its pace and increased by 96 per cent between TE 1972-73 and TE 1992-93. The other major development during this period was the launching of the

White Revolution, made possible through a rare way to develop India's dairy development. The Operation Flood programme launched in 1970s used a combination of food-aid in the form of milk powder and butter oil from the European Economic Community (EEC) to stabilise domestic prices of dairy products and develop dairy cooperatives by creating physical and institutional infrastructure for procurement, processing, and marketing of milk and build linkages with the main cities of the country. This was followed up by financial aid from the World Bank during the second phase of Operation Flood in the 198s0 to integrate efforts made by state governments into a national level overall programme. And, during the 1980s an attempt was also made to increase supplies of oilseeds and reduce imports of edible oils through a Technology Mission on Oilseeds(TMO) in the middle of 1980s. The approach was very much on the of dairy development model and the effort was to develop location-specific technologies to boost supplies, create marketing facilities, and modernise edible oil processing technology. The mission was successful in boosting supplies of oilseeds initially through expansion in area under oilseeds, but there was not much increase in productivity. The consequence of these changes was that production of cereals increased by 75 per cent from 93 million tonnes in the early 197os to 162 million tonnes in the early 1990s. The output of milk also increased considerably by 153 per cent from 22 million tonnes in the early 1970s to 56 million tonnes in the early 1990s. The oilseeds output also showed a significant growth and shot up by 122 per cent from 9 million tonnes at the beginning of Phase 2 to 19 million tonnes by the end of Phase 2. The population also increased by 302 million and there was acceleration in 1the process of urbanisation as share of the rural population in the total population decreased from 80 per cent in the early 197os to 74 per cent in the early 1990s, a significant change compared to progress made in Phase 1. The per capita income also increased at a higher rate during this phase, 2.4 per cent per annum compared to just 1.5 per cent growth witnessed during Phase 1. And the external demand also went up considerably as net trade balance of the agricultural and allied products increased from US$ 410 million to US$ 6.4 billion. As the per capita income grew at a higher rate during this phase the consumption expenditure at constant prices on food items such as milk and milk products and meat products (eggs, meat, and fish), and fruits and vegetables increased (Figure 4) and a substantive part of growth in the food basket was, therefore, contributed by these three broad groups (Figure 5). The contribution of cereals was much less in comparison to both milk and milk products and fruits and vegetables and also in comparison to the contribution made by cereals in Phase 1.

Phase 3: From TE 1992-93 to TE 2012-13:-

In the most recent phase of transformation, Phase 3 between TE 1992-93 to TE 2012-13, which witnessed the launching of economic reforms and liberalisation of the economy, there was a significant shift in the drivers of transformation from the supply side factors to the demand side factors. Though there was a respectable growth in gross irrigated area, which increased from 65 million hectares to 87 million hectares, yet growth in the gross cropped area slowed down considerably . Similarly, the immense increase in the usage of fertilisers experienced in Phases 1 and 2 also decelerated. Although there was an increase in the road network and electricity generation and investment in the agricultural and allied sectors also expanded. But the supplies of all main commodities like cereals, oilseeds, and sugarcane did not show much increase. The only exceptions were fruits and vegetables and cotton the supplies of which increased significantly during this period. Similarly, supplies of livestock products – milk, eggs, and meat maintained their growth momentum even during this phase. As the per capita income grew at a much higher rate in comparison to the earlier two phases, for this reason the per capita consumption expenditure on food items such as meat and meat products (eggs, meat, and fish), dairy products, fruits

and vegetables, and other food items increased significantly . The main leading development of this phase was a decline in per capita consumptionexpenditure on cereals. As a result, much like in Phase 2 the bulk of growth in foodconsumption basket came from the contribution of fruits and vegetables, dairyproducts, and meat products . The other significant development was theemergence of external demand with significant increase in exports from agriculturaland allied sector. While the share of the agricultural exports in total export is low, but the country has emerged as a net exporter of a range of agricultural and alliedproducts .

Big Push to Automation Activities:-

Indian agricultural libraries were progressing slowly in automating their activities due to want of financial resources, but over the past decade the libraries got a big push with grants flowing in from the Indian Council of Agriculture Research (ICAR) and World Bank-aided projects. ICAR and the respective state government are the main funding agencies for the development of universities in India. They realized that libraries play a vital role in strengthening education and boosting research activities, and that the existing scenario of the agricultural libraries needed to be reinforced and beefed up, using technological innovations to increase collaboration, digitalization and access to electronic resources. Several annual development grants for libraries were released, some in the form of projects, others for strengthening of digital infrastructure and e-resources. □e libraries then led a transition from conventional to automated functioning

and are now advancing to digitization activities. As universities are controlled by different states, the situation of improving libraries is in different phases, with some
quite advanced and others catching up considerably. A promising number of thirty five (62.5%) Indian agricultural libraries operate in an automated environment and have an OPAC, although Web surfing or OPAC are not very popular. Only eleven (19%) libraries, such as the Agricultural University, the Marthwada AgricultureUniversity in western India, the GB Pant University, and the Shere Kashmir Agriculture University in northern India have hosted their catalogues on their library homepage or have a web OPAC accessible 24x□. If we look at inventory management in an automated environment, the situation is mixed: twenty seven (4□.21%) libraries have automated inventory and are using barcodes and scanning technology. Uniquely, one library—the recently established the Uttrakhand University of Horticulture and Forestry, bifurcated from G B Pant University of Agril Technology—has advanced to Radio Frequency Identification (RFID) system. RFIDs, which are popular for inventory management and security issues in the western countries, are at early stages in Indian agricultural libraries, but already other libraries like the premier Indian Institutes of Technology or Institutes of Management are well automated using RFID techniques. □e huge cost factor and the extensive collections in most agricultural libraries, however, have been
deterrents to adopting advanced technologies like RFIDbased document identification and security systems. Almost all agricultural libraries (92.□5%) provide internet browsing facility to their patrons. Most libraries have created an “e-library’, a separate and distinct section within the library premises with increased bandwidth on connected computers with backup facilities to provide access to electronic resources such as e-books, e-journals, databases, and online portals. With grants from World Bank-funded NAIP, the Indian agricultural Agricultural Information Worldwide – vol. 6 – 2013/2014
14□ libraries got a boost to expand e-resources, including subscriptions to databases, e-books and subscriptions to research material from prominent international publishing houses through the CeRA

consortium. The Consortium for e Resources in Agriculture (CeRA)was create d to provide refined access to e-journals within the community of National Agriculture Research System (NARS), and details about this will be explained in a later part of the article. A number of libraries have given discoverable links to the consortium in their respective library home pages. Besides CeRa, links have been provided to some other collaborative projects like e-Granth's Union catalogue and digital repositories such as KrishiKosh, which is discussed in the following text. It was also observed that a number of libraries are providing access to these services through campus local area networks (LANs) or Intranet and the discoverable links are not visible over the library web page.

Indian Agricultural Consortium – The agricultural libraries over the past few years have been witnessing a difficult phase due to budget shortfalls and limited financial resources to maintain subscriptions to the best research material. The escalating costs of reputed journals in agricultural sciences has lead several institutional libraries to deprive their patrons of much of the latest international research material. Also the rising costs of subscriptions to journals have forced the Indian community of researchers and information professionals to deliberate and look at cheaper alternatives, like open access and consortium mode of subscription for online access to information over the web. Thanks to the ICT revolution and World Bank-funded initiatives from the Indian council of Agricultural Research (ICAR, there has been support for projects like the National Agricultural Innovation Project (NAIP) or its sub project CeRA (Consortium of e-Resources in Agriculture). Realizing that the greatest cost cutting and most effective negotiations for reducing subscription costs are achieved by forming a consortia, the librarians and agricultural research community established a national consortiumproject CeRA in 200□ to provide the Indian agricultural research and academic community country-wide access to international information resources and to enhance and advance the existing R&D information resources base to leading world class institutions. The national consortium project was established with the key objectives of providing access to e-journals and to evolve a NAAS (National Academy of Agricultural sciences) rating and Science Citation Index facility for evaluation of agricultural scientific publications in India. The consortium was made functional in the year 200□, starting with subscriptions to some of the best online research materials from prominent publishers like Springer Verlag, Elsevier, Taylor & Francis, and Annual Reviews, as well as access the Indian Journals.com online. These made accessible 24x□ to all agricultural universities and ICAR research institutes through their respective IP addresses from a common platform or the website, www. cera. Jccc. In.

Conclusion

Indian Agricultural libraries have taken on the technology and are now using a number of sophisticated IT and web based tools to disseminate digital information to their user communities. Most libraries have mechanized their services to the extent of developing in house databases, web-based OPACs and automated inventory or circulation, although at different levels. Digitization and resources sharing of information sources is fast catching up with consortium based projects like Krishi - Prabha and e-GRANTH, but the agricultural libraries have to go a long way in developing institutional repositories
and moving libraries more fully to the web and improving upon their static library websites. Discussions, experimentation and collaborations between libraries and the user community, and platforms like various Library associations, academic meeting,
conferences etc. can be used for furthering these causes. The only specialized Agricultural Library Association (AALDI) in the country got revived in the year 200□ after lying in dormancy since 1993, and there is a clear indication that agricultural information professionals are realizing their greater responsibilities and challenges in

the digital era. □ey cannot remain oblivious to the technological advances, but must move on for the cause and extend digitization of resources and provide seamless access to information for their users. Government financial support and good policy making and collaborative efforts from time to time are required nfor sustainable development of digital information resources management in agricultural libraries and

information centers. A breakthrough has been made with the launch of World Bank-aided projects implemented by ICAR like NAIP, but how sustainable project will be is a crucial question and has to be explored.

References and Notes:-

1. Acharya N.G. Ranga Agricultural University, (A.N.G.R.A.U) http://www.angrau.net/
2. Allahabad Agricultural Institute, (A.A.I.) http:// www. aai du dec. org/
3. Anand Agricultural University, (A.A.U.) http://www.aau.in/
4. Arvindan, M. 1988. Opportunities for Higher Agricultural Edu cation in India. ICAR. New Delhi.1
5. Assam Agricultural University, (A.A.U.) www.aau.ac.in
6. Beeding, Marshall. 2007. Library technology guides: Key resources in the field of automation. http://www.library technology. org
7. Bidhan Chandra Krishi Vishwa Vidyalya, (B.C.K.V.V.) http:// www.bckv.edu.in/
8. Bihar Agricultural University, (B.A.U.) www.bausabour.ac.in
9. Birsa Agricultural University Kanke, (B.A.U.) http:// www. Bauj harkhand.org/
10. CeRa-□e consortium for e-resources in agriculture sciences. http://cera.iari.res.in/
11. Central Agricultural University, Imphal, Manipur, (C.A.U.) http:// www.cau.org.in/
12. Central Institute of Fisheries Education, (C.I.F.E.) http:// www. cife.edu.in/