International Journal of Information Science and Computing
Citation: *IJISC*: **10**(01&02): 39-49, June and December 2023
DOI: 10.30954/2348-7437.1.2023.5

INFORMATION SCIENCE AND TECHNOLOGY FOUNDATION

Review Paper

Agro e-Governance Projects in India

Mahabubul Hoque

Department of CIS, Raiganj University, West Bengal, India

Corresponding author: mahabul95@gmail.com

Received: 25 Aug., 2023 **Revised:** 26 Nov, 2023 **Accepted:** 04 Dec., 2023

ABSTRACT

India is a big country in which most of the people live in rural areas. Nowadays rural development is important for the progress of the economy of our country. Faster and better communication is possible with the use of Information and Communication Technology (ICT). Generally e-Governance is the application of ICTs to provide government services to the citizens through Internet. e-Governance services are improving service delivery more effective, transparent and faster. Through e-Governance all the government services are available at door step anywhere and anytime to all the stake holders. IT (Information Technology) plays a vital role in all facets of Indian agriculture. IT facilitating the farmers in improving the efficiency and productivity of agriculture and allied activities. IT helps to improve overall quality of life by providing timely and quality information inputs for decision making. Agriculture is a crucial component of India's economy for providing food security, poverty reduction, nutritional security and sustainable development in India. In India for Agricultural Development and for Agricultural Extension, the relevance of ICTs is extremely high. In agricultural sector, the application of ICT is very important. Through improved information and communication processes, e-Agriculture is an emerging field focusing on the enhancement of agricultural and rural development. e-Agriculture generally includes the conceptualization, development, design, evaluation and application of innovative ways to use ICT in the rural domain focusing on agriculture. In agricultural production system all stakeholders need information and knowledge about these phases to manage them efficiently. The major sources of Agricultural information are Radio and Television. In many parts of the country. The farming community are also getting information by Internet supporting Information Kiosks. For Agricultural Extension scientists, researchers, functionaries and organizations ICTs are highly relevant. In this study the author has discussed about various agro e-Governance projects of India.

Keywords: e-Governance, ICT, robotics in agriculture, IT, e-agriculture

How to cite this article: Hoque, M. (2023). Agro e-Governance Projects in India. *IJISC.,* **10**(01&02): 39-49.

Source of Support: None; **Conflict of Interest:** None

The paper titled "Agro e-Governance Projects in India" is conceptual nature and theoretical and the objectives of the paper are as follows:

- To know about the basic of the e-Governance.
- To know the definition of the e-Governance.
- To understand about the different types of the e-Governance.
- To know about the various Agro e-Governance Initiatives in India.
- To learn about the services provided by the various Agro e-Governance Initiatives in India.
- To know about the advantages of e-Governance.
- To learn about the aims and objectives of e-Governance.

Introduction

e-Governance refers to the use of Information and Communication Technology by government or public agencies for public governance. Digital Governance indicates to carrying out governance process in a digital way to deliver digital services[2].

The basic aims and objectives of e-Governance are as follows[10]:

- Delivery government services to anytime, anywhere.
- To encourage citizen participation
- Fast and convenient service to citizens.
- It reduces delays, Red tape and corruption
- Transform the traditional government to good government by making it accessible, transparent, effective, responsive and accountable.
- Building strong and effective information chain.
- Effective utilization of resources
- To increase government and citizen interaction
- To reduce the cost of Government
- To build an informed society

e-Governance indicates to governance processes in which information and communication technologies (ICTs) play an important role in delivering governance-related products and services. While applied to the agricultural sector, e-Governance refers to use of ICTs in delivering governance products and services which are of use to the agricultural community, including farmers, livestock breeders, traders, dairy workers, scientists, agriculture extension workers, middlemen, and NGOs working in the agriculture sector[8].

The Role of e-Governance in the Agricultural Sector

ICTs can be applied in the agricultural sector to provide many of the products and services. There are many projects which are funded by national governments and donor agencies, private sector or entrepreneurs which demonstrate the useful role of ICTs in the agricultural sector. ICTs should be used to bring deeper and vital changes in the governance sphere which surrounds the agrarian community. e-Governance for the agricultural sector aimed at bringing 4 important changes-

(a) Increase the quality and standards of existing agriculture related governance products and services being provided

By the use of IT tools, existing agricultural extension services can be improved. New communication channels can be opened by which information about market prices and government procurement prices can reach farmers or providing updated information about local agriculture offices and the services provided by them[8].

(b) Provide new agricultural governance services and products to the public which are needed but have not been provided so far

This could include providing opportunities to farmers to access and modify their land records data accurately. Providing credit cards to farmers to be used for purchasing of seeds, fertilizers and farm equipments or installing community based equipment which could update the farmers about rainfall prediction, about prevalent crop diseases, or movements of wild animals in the area[8].

(c) Improve the participation of agrarian community in deciding what governance products and services should be provided and in what manner

It may include building capacities of farmers to decide how agriculture related government funds should be spent in their village, for instance on repairing the lining of canals or restoring of rain harvesting structures. Government decisions should be influence on the appropriate location of check dam construction, deciding who should qualify for farm subsidies and the kind of courses offered by the local agriculture training centers[8].

(d) Under the governance sphere bring new sections of the agrarian community

This includes bringing new section of agrarian community within the governance sphere and namely those who are more likeable to remain excluded: landless farmers, women farmers, migrant labourers, old farmers and tribal communities. Only when efforts are made to meet the above four conditions, can good governance become a reality for all sections of the agrarian community, and can ensure a healthy growth of the agricultural sector and improvement in the welfare of households which are dependent on it for their livelihoods[8].

Thus the role of e-Governance in agriculture sector goes beyond important, but singular applications, such as digitizing of government records, making available government forms online, grievance-redressal system, or putting computers in agriculture training centers. Instead e-Governance becomes a tool for

providing agriculture related governance services and products more effectively and uniformly to the entire agrarian community.

Many researchers have defined the e-Governance as follows:

- Prabhu (2004) have defined the e-Governance as[13] "For achieving the desired goals using information and communication tools, SMART governance by focusing on citizens and prefixed with 'e' is known as e-governance".
- Broome (2015)[4] have defined the e-Governance as follows "e-Governance is the broader concept of using and application of information and communication technologies to the management of relationships and networks within society".
- Kettl (2000) have defined the e-Governance as follows[9] "e-Governance is a process of describing the links between government and its broader environment - administrative , political, and social. The application of electronic links that is the interaction between government and citizens and government and businesses, as well as in internal government operations for simplifying and improving democratic, government and business aspects of governance,".
- Dawes (2008)[5] have defined the e-Governance as "e-Governance consists of the use of information and communication technologies to support government administration, democratic processes, public services, and relationships among civil society, citizens, the private sector and the state".
- Gupta and Jana (2003) have defined the e-Governance as[6] "e-Governance includes various activities like the design of a user friendly citizen interface in local languages, back-end database integration, communication using multiple channels, security of transactions, cyber law infrastructure, participating policy-making processes, transparency in government activity, and willingness among government agencies to embrace open styles of functioning".

Types of e-Governance services

There are four types of e-Governance services such as:

G2G (Government to Government): In this types the exchange of information and services and the interaction takes place within the government. Examples of G2G services are:

- The police department of different states shares information
- Financial and budgetary work of government
- Government documents exchange of various departments.

G2C (Government to Citizen): In this types of e-Governance, the interaction takes place among general public and the government. Everybody has the right of freedom to share their views and grievances on government policies anytime, anywhere. Examples of G2C services are:

- Online bills payment
- Online registration of applications

- Land records keeping
- Online filling of complaints

G2B (Government to Business)*:* When the interaction takes place between Government and Business class then it is called Government to Business. Examples of G2B services are:

- Tax Collection
- Patent approval and rejection
- Payment of bills and penalty
- Sharing of rules and data

G2E (Government to Employee): Generally the government recruits large number of employee. Government deals with employees on a regular basis. With the help of ICT, the interaction between government and employee is very fast and efficient. Examples of G2E services are:

- Data related to attendance, payroll etc. can be shared through this model
- Employee can files complaints and their dissatisfaction
- Rules and regulations can be shared
- Employees can be check Payment and working records
- Professional issues forms can be registered through this model

Advantages of e-Governance

The advantages of e-Governance are as follows:

- **Speed —** Nowadays faster and more efficient communication is possible due to advanced technology. We can transmit large volume of data throughout world with the help of Internet and smartphones.
- **Saving Costs —** Government expends large amount money to buy stationery for official purposes. But by using the Computer, Smartphones and Internet can save huge amount of money in every year.
- **Transparency —** e-Governance makes all the functions of the government transparent. Government should uploaded all information onto the Internet such that the citizens can access the information from anywhere anytime.
- **Accountability —** Transparency directly links to accountability. Once the functions of the government are available, citizens can hold them accountable for their actions.
- **Reduced Corruption —** All the Government information and function should be uploaded onto the Internet and be available to public domain. Therefore, the citizens can know all the functions of the government and through this the corruption can be reduced.

- **Growth in GDP —** The GDP can be increased due to transparency and reduced corruption of e-Governance. e-Governance reduces paper work and red-tapism in the administrative process.

Agro e-Governance Projects in India

Some Successful e-Governance initiatives in India

The recent development of e-Governance in agriculture in India are Kisan Call Center (KCC), Information Village Project of MSSRF (MS Swaminathan Research Foundation), ITCs E-chaupal, Gyandoot Project, IT-Kiosks, Bhoomi Project, Warana weired Village, I-kisan project of Nagarjun group of companies, Village Knowledge Center etc. It add value to the lives of Farmers and End-users in a Sustainable way through Knowledge Management Portals, e-kiosks, Common Service centers in grass root level[11].

The applications of ICT in India like E-Seva, Warana, Lokmitra, Dristee, E-Chaupal, E-Post, Gramdoot, Tarahaat, Praja, Akshaya, Dyandoot, Dhan, Honeybee are successful in achieving their aims and objectives[11].

Some Agro e-Governance projects are discussed below:

e-KRISHI VIPANAN: By using latest advancement in ICT, it professionalizes and reorganizes the agriculture trading business of Mandi Board. It makes the operations more effective, totally transparent. It is benefiting all stakeholders like farmers, traders & the government and also empowering them through accurate and timely information for effective decision making[15].

e-Extension (e- Soil Health card Program): The Department of Agriculture, Gujarat State, is one of the ambitious programs which aims to analyze the soil of all the villages of the state. The aims of it to offer online guidance to farmers on their soil health condition, fertilizer usage and alternative cropping pattern[15].

Kisan Call Centres: Kisan call centres have been set up all over the country with a view to leverage the extensive telecom infrastructure in the country in order to deliver extension services to the farming community. The farmers can get agricultural information as and when required at free of cost. Agricultural and allied sectors related queries are being addressed through the kisan call centres instantly, in the local language by the experts of State departments, SAUs, ICAR institutions etc. Every state has call centres which are expected to handle traffic from any part of the country. At a call centre farmers can interact by using SMS by telephone and computer to understand the problem and answer the queries[15].

AGRISNET(Agricultural Information System Network): A Mission Mode Project for Agriculture Department. The objective of this Project is to create a sustainable data bank of all Agricultural information and its related activities and also to access the same by a secured Network. Objective of the Project is to connect all Agricultural Offices up to Block level with State Department of Agriculture for improving information access and to provide advisory services to the farming community by the use of ICT. And to provide advisory services to the farming community through use of ICT[8].

Agri Business Centres: Agri Business Centres offer a web based solution to the small and medium farmers as well as owners of massive landholdings. It brings on a single platform all the stakeholders in agribusiness such as farmers and farmer groups, commodity brokers, institutions and autonomous bodies, agro machinery and farm equipment makers, cooperatives, food processors, packaging technology providers, pre and post harvest management experts, insurance companies, warehousing and logistics agencies, surveyors and certification agencies.

Bhoomi: Bhoomi Project of Karnataka is about online delivery of Land Records. This project is a self-sustainable e-Governance project for the computerized delivery of 20 million rural land records 6.7 million farmers of Karnataka.

Tata Kisan Kendra: Tata Chemicals Ltd or TCL came out with Tata Kisan Kendra to help farmers in states of Haryana , Uttar Pradesh and Punjab. With the help of Geographic Information Systems (GIS), the Tata Kisan Kendra tracks key parameters relevant to farmers such as soil, ground water and weather on a real-time basis. The GIS software provides information relating to roads, rivers or buildings. Satellite image processing can help to identify unproductive farming practices and also track the progress of insect attacks across states, get crop estimates or update maps. The information that brought to farmers by the Tata Kisan Kendra, use remote-sensing technology to analyze soil, inform about crop health, pest attacks and coverage of different crops predicting the final output. It will helps farmers adapt fastly to changing conditions. Therefore the farmers can get healthier crops, higher yields and also extended income[15].

AKASHGANGA: It was established in 1996 under the banner of Shree Kamdhenu Electronics Private Ltd. (SKEPL) by a group of young entrepreneurs. It was set up at a time when information technology was almost unknown to the villages of India. The success of Akashganga indicates the potential of information technology to impact livelihoods in poor, rural communities. The experience of Akashganga demonstrates that even illiterate or semi-literate people can adopt IT-based systems when they see substantial benefits and when the systems are deployed in purposeful, easy-to-use ways. Akashganga uses ICT to facilitate rural milk producers by combining all the operations of rural co-operative society right from milk procurement to accounting. Every farmer is given a plastic identification card. At the time of arriving at the Raw Milk Receiving Dock (RMRD) counter, his/her identification is updated in the PC[14][15].

AGMARKNET: It is a comprehensive database which links together all the important agricultural product markets in the country.

e-Choupal: e-Choupal has been launched in June 2000 in which village internet kiosks managed by farmers - called sanchalaks. In India agriculture is the backbone of country. In India farmers have to depend on multiple agents, right from the process of procuring raw materials to selling their products. And each agent will add his/her profit margin, therefore increasing the cost of product. Some of the agents even try to block the market information. For protecting the farmers from such practices, the International Business Division of Indian Tobacco Company (ITC-IBD) have launched an e-government initiative called e-Choupal. E-Choupal is useful to the agricultural products as well as selling home appliances and consumer goods. Every e-Choupal is equipped with a PC, printer, internet connection and UPS (Uninterrupted Power Supplies). If the power supply is erratic, a solar panel is provided. If the internet connectivity is not standard, then a VSAT (Very Small Aperture Terminal) connection is provided along with another solar panel for supporting that[14][15].

e-Sagu: e-Sagu is an ICT based personalized agro-advisory system which is developed in 2004. In Telugu language 'Sagu' means 'cultivation'. The objective of it is to improve farm productivity by delivering high quality personalized (farm-specific) agro-expert advice in a timely manner to each farm at the farmers' door-steps without farmer asking a question. On a regular basis (typically once a week) the advice is provided from sowing to harvesting. As a result it reduces the cost of cultivation and improve the farm productivity as well as quality of agri-commodities[15].

Gyandoot Project: This project is a government-to-citizen, intranet-based service portal. This project was implemented in the Dhar district of the state of Madhya Pradesh, India, in January 2000. It was

designed to extend the benefits of information technology to people in rural areas by directly linking the government and villagers through information kiosks. The kiosks provide access to a different of government services like registration of complaints and submission of applications for the issuance of certificates and loans. Data on prices of agricultural crops in various markets are also available. This Project pioneered the idea of rural telecenters in India. The Gyandoot project was considered to be very successful in the early years of its implementation. This project was awarded the Stockholm challenge information technology (IT) award in 2000 for public service and democracy[14][15].

Drishtee: It is a rural model of distribution and promotional network for consumer goods and basic services. Generally the users are getting information in the form of services via internet[14][15]. It enables e-governance and offers information about and also access to market-related information, education and health services and private information exchanges and transactions. The objectives of it is to be the 'window to the world' for Indian villagers. Drishtee is for developing IT enabled services to rural and semi-urban populations by the usage of state-of-the-art software. This project has successfully demonstrated its concept in over 90 kiosks across five Indian states. Drishtee uses state-of-the-art software that facilitates communication and information interchange within a localized intranet between villages and a district center. This communication backbone has been supplemented by a string of rural services like Avedan, Gram Daak (mailing software), Land Records, Vaivahiki (Matrimonial), Gram Haat (virtual market place), Shikayat (online grievance redressal), Mandi Information System and a host of other customized services. These services are provided by Drishtee in a village (or a group of villages) by a local villager [16][17].

The National e-Governance Plan for Agriculture (NeGP-A): The National e-Governance Plan for Agriculture (NeGP-A) has Launched with the vision of leveraging digital tools to enhance agricultural productivity. In India agriculture is a cornerstone of the economy. The National e-Governance Plan for Agriculture (NeGP-A) appeared as a transformative government initiative to empower farmers by technology. The NeGP-A has played a crucial role in providing farmers with vital information, services and market access[3].

NeGP-A is facilitating improved communication in the agricultural sector. One notable aspect was the digitization of land records, bringing transparency and efficiency to land-related transactions. This not only reduced bureaucratic hurdles but also ensured secure land tenure, empowering farmers, and bolstering their confidence. Common service centers setting up under NeGP-A proved to be a game-changer for farmers in rural areas. These centers acted as hubs for accessing various government services, agricultural information, and digital literacy programs. Farmers could now avail themselves of critical services without the need to travel long distances, saving time and resources. The creation of agricultural market information systems was another vital component of NeGP-A. By providing real-time market data, farmers were equipped to make informed decisions regarding crop choices and pricing strategies. This empowered them to navigate the market dynamics more effectively, leading to improved income and sustainability. For Indian farmers, the National e-Governance Plan for Agriculture has been instrumental in reshaping the landscape. NeGP-A has simplified bureaucratic processes and has also empowered farmers with information and market access by harnessing the power of digital technology.

Agribazar is a significant player in the agricultural technology landscape, seamlessly integrated with the government initiative NeGP-A to amplify its impact. Online trading of agricultural commodities are facilitated by agribazaar. It connecting farmers directly with buyers. This eliminated middlemen. It

ensured fair pricing for farmers' produce. By using agribazaar's platform, farmers could showcase their products to a broader market. It also unlocking new opportunities.

Kisan Credit Card (KCC): The Kisan Credit Card program is introduced in 1998. This model was developed by the NABARD (National Bank for Agriculture and Rural Development) to provide term loans and agricultural needs. The objective of this program is to meet the comprehensive credit requirements of the agricultural sector by giving financial support to farmers. This scheme has short-term credit limits for crops, and term loans. Kisan Credit Card offering credit to the farmers in two types viz, cash credit and term credit for allied activities such as pump sets, land development, plantation, and drip irrigations[1][7][12].

Under National e-Governance Plan in Agriculture, data is given to ranchers through numerous channels including Common Service Centers Internet Kiosks and SMS. Presently, 12 distinguished groups of administrations give data on climate; soil wellbeing; seeds, supplements, bugs; water system; crops, great horticultural practices, cultivate hardware; promoting foundation; cultivate product costs, entries, obtainment focuses; electronic affirmation to send out and import; dry season help and administration; domesticated animals, fisheries administration; preparing; observing usage and assessment of plans[18,19,20].

Robotics in agriculture: The use of robotics in the field of agriculture is quickly becoming a thought-provoking high-tech industry. It also representing novel professionals, original companies and new investors. The technology is developing rapidly. It advancing the fabrication capabilities of farmers and robotics and mechanization expertise as we know it. In the farming sector, the multipart ranch duties are being too risky[21]. They are performed by the robots, which are tricky for human to achieve. The robotic farmers are able to perform cultivating vegetables, fruits, soybeans, wheat and rice. After that these are packed in boxes and shipped across the country by this robotic technology. Agricultural robots are rising production yields for farmers in assorted ethnicity. From drones to self-governing tractors to robotic arms, the technology is organism deployed in original and pioneering applications. Agricultural robots for farmers mechanize purposeful, chronic and boring tasks. Some of the most common robots are used in agriculture for harvesting and picking, seeding, weed control, independent mowing, spraying and lessening, pruning, arrangement and packing and effectiveness platforms. One of the most popular robotic applications in agriculture is harvesting and picking due to the accurateness and rapidity that robots can attain to progress the size of yields[12].

CONCLUSION

e-Governance is the application of Information and Communication Technologies to provide government services to the citizens through Internet. e-Governance provides a new way of government functioning. e-Governance plays a vital role in government functioning. e-Governance can reduces corruption and increases the revenue growth. It also reduces delays and red tapes in government functioning. Generally public governance should be more transparent, effective, responsive and accountable to the development process. e-Agriculture empowers propitious and it also provide exact information regarding current market cost to farmers at lower cost. e-cultivating organization provides benefits such as extend productivity, significant salary, extended quality in things, raised benefit, extended efficiency, straightforward data collecting about climatic condition, clamminess, soil type, crop plan, etc. and can share agrarian data rapidly. These information are additionally important to the agriculturist. In this paper the author has discussed about the different agro e-Governance Initiatives in India. The Government should always try to provide good quality services to citizens for the public satisfaction.

ACKNOWLEDGEMENTS

Special Thanks to Dr. P. K. Paul, Head/Coordinator of Department of Computer and Information Science, Raiganj University, West Bengal, India and Prof. K.S. Tiwary, Head Department of Mathematics, Raiganj University, West Bengal, India for their support and role for helping and guiding this work.

REFERENCES

1. Alam, M.J. and Tarananum. 2021. Socio-economic impact of e-Governance on agricultural growth in India: A case study of Western Uttar Pradesh. *PalArch's Journal of Archaeology of Egypt/Egyptology*, **18**(10): 265-275.
2. Algazo, F.A., Ibrahim, S. and Yusoff, W.S. 2021. Digital Governance Emergence And Importance. *Journal of Information System and Technology Management,* **6**(24): 18-26.
3. Behera, B.S., Das, T.K., Jishnu, K.J., Behera, R.A., Behera, A.C. and Jena, S. 2015. E-governance mediated agriculture for sustainable life in India. *Procedia Computer Science*, **48**: 623-629.
4. Broome, P.A. 2015. 'Before e-governance and e-government, back to basics! The case of the Caribbean', *SAGE Open,* **5**(3): 1–11.
5. Dawes, S.S. 2008. 'The evolution and continuing challenges of e-governance', *Public Administration Review,* **68**(S1): S86–S102.
6. Gupta, M.P. and Jana, D. 2003. 'E-government evaluation: a framework and case study', *Government Information Quarterly,* **20**(4): 365–387.
7. Hariharasuthan, M.R.A.M.N., Santhosh, M.K., Ahamed, M.S.S. and Shahul Hameed, M.S. E-Agriculture and Rural Development in India. *Journal homepage: www. ijrpr. com ISSN*, *2582*, 7421.
8. Jose, J. A Conceptual study on the problems and prospects of e-Governance in Indian agriculture sector.
9. Kettl, D.F. 2000. 'The transformation of governance: globalization, devolution, and the role of government', *Public Administration Review,* **60**(6): 488–497.
10. Lee-Geiller, S. and Lee, T.D. 2019. Using government websites to enhance democratic E-governance: A conceptual model for evaluation. *Government Information Quarterly,* **36**(2): 208-225.
11. Mittal, S.C. 2001. Role of information technology in agriculture and its scope in India. *Fertiliser News*, **46**(12): 83-88.
12. Nedumaran, D.G. and Manida, M. 2020. E-agriculture and rural development in India. *JAC : A Journal of Composition Theory*, **13**(1): 105-114.
13. Paul, P.K. 2021. Agricultural Informatics and practices—The Concerns in Developing and Developed Countries. *Smart Agriculture Automation Using Advanced Technologies: Data Analytics and Machine Learning, Cloud Architecture, Automation and IoT,* 207-228.
14. Paul, P.K. 2021. Agricultural Informatics vis-à-vis Internet of Things (IoT): The Scenario, Applications and Academic Aspects—International Trend & Indian Possibilities. *Agricultural Informatics: Automation Using the IoT and Machine Learning,* 35-65.

15. Paul, P.K., Bhuimali, A., Sinha, R.R., Aithal, P.S., Saavedra, R. and Aremu, B. 2020. Artificial intelligence and robotics in agriculture and allied areas-A study. *International Journal of Bioinformatics and Biological Science,* **8**(1): 1-5.

16. Paul, P.K., Bhuimali, A., Sinha, R.R., Tiwary, K.S., Baby, P. and Deka, G.C. 2020. Agricultural informatics: The emerging field with references to potentiality as post doctoral certificate programs. *International Journal of Information Science and Computing,* **7**(1): 01-13.

17. Paul, P.K., Chatterjee, D., Ghosh, M. and Ganguly, J. 2015. Agricultural problems in India requiring solution through agricultural information systems: Problems and prospects in developing countries. *International Journal of Information Science and Computing,* **2**(1): 33-40.

18. Paul, P.K., Sinha, R.R., Baby, P., Shivraj, K.S., Aremu, B. and Mewada, S. 2020. Agricultural Informatics as a Branch of Study in Information Sciences and Technology Domain-A Proposal towards Digital Agriculture. *International Journal of World Policy and Development Studies,* **6**(6): 56-65.

19. Prabhu, C.S.R. 2004. E-governance: Concepts and Case Studies , PHI Learning Pvt. Ltd., New Delhi, pp. 21–40.

20. Salkute, V. R. and Kohle, S.R. 2011. E-Government Milestones In Rural India: Eagro Aspects. *International Journal of Enterprise Computing and Business Systems*, **1**(2).

21. Singh, K.M., Kumar, A. and Singh, R.K. 2015. Role of information and communication technologies in Indian agriculture: An overview. *Available at SSRN 2570710*.