SUMMARY

Advanced or Modern communication media now allow for intense long-distance exchanges between larger numbers of people (communication via e-mail, Internet forums, and teleportation). On the other hand, many traditional broadcast media and mass media favor one-to-many communication (television, cinema, radio, newspaper, magazines, etc.). Electronic media is enjoying broader use every day with an increase in electronic devices being made. Interaction, interchange, transaction, dialogue, sharing, communication and commonness are ideas that crop up in an attempt to define the term ‘communication’. The main theme of communication is to provide information to people, improve knowledge, develop desirable skills and positive changes in attitude.

Men hurling through space send back radio reports of what they experience. Cameras mounted on space shuttles gives us close up televised photographs of the moon’s surface. Television programmes are being transmitted from one side of the world to another by bouncing of signals off a satellite in orbit. Each year brings additional wonders in the craft of communication. With computers and instantaneous transmission systems as well as developments in the field of telecommunication and information technology we are blending time and space at our will.

The advanced communication media has opened a new dimension to the horizon of human world. By application of these media, millions of people have come to acquire new ideas, philosophies, approaches and attitudes.
The modern communication media are ephemeral media of communication that demand a major share in educational and developmental endeavours, towards enhancement as well as enrichment.

It is seen that advanced communication media are there and employed by all the institutions and organizations irrespective of being government, voluntary or private; but it is also risked that these media may remain unutilized in the long run instead of becoming a tool for rural development.

The advanced technology in computer, videotechnology, satellite communication and internet which provides user access to a wealth of information, is indicative of their potentiality. But, in order to use it, users must have access to a computer, a phone line and own an account, proper infrastructure, proper power supply, etc., all of which require money. For this reason, only a small percentage of the population has access to these superb technologies. Thus, the need is to make it available to everyone without any bias in a cost effective manner. The government, voluntary agencies, State Agricultural University and private/others institutions which are devoted and dedicated towards the cause of rural development and are really a step forward in the application of advanced communication media in this sphere should try to transform these media as the media of masses and common people.

Keeping this background in mind, the present study was designed with the following specific objectives.

The study was conducted in the purposively selected Buxar and Patna district Bihar State in the year 2011-12 to study the Usage of Advanced
Communication Media by Extension Personnel in Bihar State. 300 extension personnel belonging to various levels of hierarchy and different organizations, i.e., State Departments, ICAR Institute and Non Government Organizations were selected using statistically appropriate sampling techniques to get representative as desired for the purpose of research on advanced communication media. The selection of State Government Departments, ICAR institute and Non Government Organizations will be done using purposive sampling. The appropriate statistical tools were utilized for the analysis of the gathered data received from the respondents through the well structured interview schedule.

The major findings of the study are as follows:

1. Majority of institutions and organizations were under Central government jurisdiction, i.e. ICAR and its sub centres (68.42%) followed by the non government organisations (21.06%) and State Government Departments (10.53%) accordingly.

2. Majority of the respondents belonged to middle management level of hierarchy or supervisory level at a percentage of 49.33 followed by lower management level or grass root workers and field extension worker at a percentage of 32.66. The higher level of administrators and officers had minimum representation with a percentage of 18.

3. 59.33 per cent of respondents belonged to middle age group as compared to a very less percentage (13.33 %) under old age group. The remaining 27.33 per cent belonged to young age group.
4. 37.33 per cent of the respondents were degree holders followed by personnel who had completed their education till post graduation level, *i.e.*, 33.33 per cent. The minimum education qualification for respondents was PUC with a percentage of 12.

5. Majority of the respondents had an experience of 1-5 years in the fields of extension, teaching, research and administration at a percentage of 38.67, 9.00, 28.33 and 6.67 respectively while very few respondents had experience of 16-20 years in the field of extension and administration with a percentage of 11.33 and 0.67, while no one has experience in the field of teaching and research.

6. An interesting aspect was found that the gap between possessing and not possessing electronic mail-ID or e-mail ID is 74.33 percent and 25.67 per cent respectively.

7. It was found that the more than half of the respondents have not undergone any pre-service, special and advanced communication media training as compared to about 35.00 per cent of respondents with exposure to inservice training.

8. Cent per cent of the respondents possess and owned television followed by mobile (94.33%), newspaper subscription (91.67%) and computer (75.00%). Least number of respondents were possessing fax machine (3.33%) at personal level.

9. Communication media are considered trustworthy and reliable which are realistic, relevant, entertaining, easy to use and understand, skills can be easily mastered to utilise it to fullest extent and media mix or combination with other media can be worked out for effective information dissemination. For this reason only, telephone, computers and laptop/LCD are strongly emphasized while the pagers are disapproved completely.

10. For official communication, telephone, computer and internet are utilised by extension personnel belonging to all the three levels but telephone and computer are utilised by cent per cent of the higher level respondents. The feeling and
perception of respondents in relation to advanced communication media usage shows that majority of the respondents \textit{i.e.}, 63.00 per cent find mobile always comfortable to use followed by fax at 49.00 per cent and telephone at 38.00 percent. Computers come next in terms of comfortability in usage at 26.00 per cent while the respondents find pagers as least comfortable and highly technical at a percentage of 96.33 in never use category.

11. Majority (70.67 \%) of the respondents had favourable attitude towards advanced communication media. About 13.33 per cent of them had less favourable attitude, while the remaining 16.00 per cent of the respondents had more favourable attitude towards advanced communication media used for rural developmental activities.

Table: Attitude of extension personnel towards advanced communication media

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\hline
Category & Score & Score Value & Frequency & Percentage \\
\hline
Less favourable attitude & Less than (mean –SD) & \(<60.34\) & 40 & 13.33 \\
\hline
Favourable attitude & Between (mean± SD) & \(\leq 60.34\) & 212 & 70.67 \\
\hline
More favourable attitude & More than (Mean+ SD) & \(>74.12\) & 48 & 16 \\
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12. Majority of the respondent considered them as easy communication (4.27), time saving (4.26), enhancement of academic contact (4.16) and economical (4.00); while it is not at all good and advantageous in terms of enhancement of self confidence (3.27), thinking critically/analytically (2.75) and enhancement of family contact (2.71).

13. Majority of the respondent considered advanced communication media as easy communication (4.27), time saving (4.26), enhancement of academic contact
and economical (4.00); while it is not at all good and advantageous in terms of enhancement of self confidence (3.27), thinking critically/analytically (2.75) and enhancement of family contact (2.71).

14. The factors involved in selection of the advanced were number of persons to be covered (mean value 0.9933), credibility (mean value 0.93), compatibility (mean value 0.93), availability of the mass media (mean value 0.9300), nature of the extension teaching methods (mean value 0.92) and message to be communicated (mean value 0.90 play an important role in the factors involved in selection of advance communication media. This shows that the factors involved in selection of media is an amalgamation and interplay of several factors depending upon the existing field circumstances and replies to ‘what, when, where, how and why’ of communication need. Several other factors such as educational and economic level of the people is also analysed before selection of any media by the communication expert/extension personnel.

15. Message is the very subject matter of communication and it is given first and foremost importance. Message should convey ideas, facts, opinion in such a way that what is expressed in language and transmitted by communicator should be comprehended by the receiver.

16. The important factor in selection of media are educational level of the end user or target group *i.e.*, message or information which is communicated should be easily understandable by the receiver and should be according to the mettle and intellectual capacity of the respondents. Number of persons to be covered (*i.e.*, population size) is also considered an important factor in selection of media as for a small group we can go for demonstrations or LCD presentation while for a larger group; we should organise and utilise effective mass media.
17. On the other side, skill on the part of extension worker was considered as least important as the extension personnel interviewed have full confidence on their skills in imparting; communicating messages and convincing villagers as well as they told that they can deal to people whatever media is at their disposal in an effective manner.

18. The major constraints during the study were found to be technological barriers (electricity and power requirement at a tune of 85 percent, lack of local language software at a tune of 76.67 percent and the poor infrastructure availability at a tune of 73.33 percent. The technological barrier is a most difficult barrier to deal with and extension personnel are forced to utilize the traditional communication media in the field conditions. Also, under financial constraint identified, it was seen that the lack of financial power of end user (61.67 %) and heavy cost of installation and usage (51.67 %) were considered as constraints .There was an interesting finding regarding the individual barriers as it was seen that the lack of awareness (52 %) regarding advanced communication media and lack of confidence and ability in the part of extension worker (47.67 %) affects the usage of the advanced communication media. Policy barriers in term of technical decisions concerning IT regulation, bandwidth allocation, pricing mechanisms, transmission standards was also considered to be a constraint to a tune of 48.33 percent.

19. Majority (95.67 %) of the extension personnel suggested providing motivation and awareness for advanced communication media followed by providing appropriate training to extension personnel (91.67%), replicating cyber extension model all over India (87.00%) and local language software for stakeholders (81.67%). Other suggestions given were band width regulations and supportive
Govt. policies and regulations (66.00%) and telecom and IT for small towns/rural areas (65.00%).

**Implications of the study:**

Bihar Government vision also states that they want to become one of the top five e-Governed, IT-enabled, e-Literate States in the Country by the end of 2012”. Cities in Bihar hold a tremendous potential for wealth & economic creation.

Bihar is moving ahead with a mission to take Information and Communication Technology (ICT) to every village and to every citizen. Bihar is using ICT as a vehicle to improve the internal processes of the government for Information Technology, administrative reforms, re-engineering and modernization with a mission to provide an efficient, responsive, transparent, and cost effective Government. Some of the key e-Governance initiatives of Bihar are SCORE, VAT Information computerization, Revenue Administration through Computerized Energy, and Election Confidential (ELECON) Etc.

It was also seen during the study that under e-governance, video conferencing and teleconferencing are utilized as a tool by the Government machinery at the Stae level to interact with Scheme/Implementing Officers/Agencies at the District/Block level. Also, few Non Government Organisations are providing e-governance, e-learning services at the doorstep of the farmers/villagers in rural areas. Bihar online portal is also dedicated to the needs of citizen providing updated information on health, employment, education, law and order, tourist, agriculture, schemes and services offered online. Bihar has
also received Gold Award under the category Innovative use of Technology in e-governace.

The research institutes are utilizing the potential of Satellite imaging and Geographic Information System for research purposes. The uses of GIS range from indigenous people, communities, research institutions, environmental scientists, health organisations, land use planners, businesses, and government agencies at all levels. It is also used for information storage; spatial pattern identification; visual presentation of spatial relationships; remote sensing - all sometimes made available through internet web interfaces, involving large numbers of users, data collectors, specialists and/or community participants. GISs have transformed the way spatial (geographic) data, relationships and patterns in the world are able to be interactively queried, processed, analysed, mapped, modelled, visualised, and displayed for an increasingly large range of users, for a multitude of purposes.

Now, the present innovation in the agriculture has led to Precision farming, characterized by a number of sophisticated tools that assist in monitoring variation and managing inputs. These include: Global Positioning System (GPS) – a referencing device capable of identifying sites within a field; Sensors and dataloggers – crop, soil and climate information can be monitored at a high frequency using these technologies; Geographic Information Systems (GIS) – maps of these attributes can be generated and analysed using simple browsers or complex models.

This can be achieved by utilizing the available agro-climatic/soil maps, watershed/wasteland atlases, GIS mapping and remote sensing capabilities for developing improved and integrated crop-livestock-fish farming system, and
developing infrastructure for value addition to farm products at the village level. These changes will provide opportunities for off-farm employment and income generation. The ICAR Research Complex for Eastern Region, Patna has undertaken research work in the areas of land and water resources management, crop, horticulture, aquatic crops, fishery, livestock and poultry, agro-processing and socio-economic aspects for agricultural development in the region so as to improve the livelihood of resource poor farmers. It is also utilizing the advanced communication media for agro advisory services and phone-in live programme for the benefit of the farming community.

The implications based on the findings of the current investigation are as follows.

1. The findings of the study pointed out that majority of the respondents prefer advanced communication media for being highly useful, economical, accurate and time saving. Thus, proper emphasis should be provided to advanced media which are electronic means of solving problems of common masses and providing them training at a faster pace.

2. Even though majority of the respondents in the study considered advanced media as an excellent and fascinating tool for development of rural communities and villages, they are not skilful enough and lack knowledge related to technicalities for their appropriate use. Hence, concerned authorities should take adequate steps by organizing camps, trainings and workshops.

3. The results revealed a very interesting fact that higher and middle level extension personnel are utilising advanced communication media at a considerable greater extent in comparison to lower level extension personnel. These grass root workers are really the connecting link between higher officials and community. They should be
provided adequate training and skills on advanced communication media usage so that they can utilise these communication media and tools for delivering required information to the people timely and accurately. Also, they should be made aware about e-governance schemes of different states as well as technical details as they are those who motivate, guide and educate villagers. The community workers should be properly educated and skilled as she/he is in maximum contact with the community.

4. The study also brought to light that message to be communicated and educational level of the people play an important role in the selection of advanced communication media. It is known fact that due to lack of softwares in local languages, very important information cannot be disseminated to people through advanced communication media and community worker, he/she may not be very dextrous in using these media and not so good in understanding English language and vocabulary. Hence, to impart messages, which are most important, he/she has to rely solely on age-old media. Thus, the need of the hour is to develop and popularise the use of newer, local language software.

5. The major constraints during the study was found to be technological barriers (electricity and power requirement at a tune of 85 percent, lack of local language software at a tune of 76.67 percent and the poor infrastructure availability at a tune of 73.33 percent). The technological barrier is a most difficult barrier to deal with and extension personnel are forced to utilize the traditional communication media in the field conditions. Also, under financial constraint identified, it was seen that the lack of financial power of end user (61.67 %) and heavy cost of installation and usage (51.67 %) were considered as constraints. There was an interesting finding regarding the individual barriers as it was seen that the lack of awareness (52 %) regarding advanced communication media and lack of confidence and ability in the part of extension worker (47.67 %) affects the usage of the advanced communication media.
Policy barriers in term of technical decisions concerning IT regulation, bandwidth allocation, pricing mechanisms, transmission standards was also considered to be a constraint to a tune of 48.33 percent. Thus, the need of the hour is to provide emphasis to the advanced communication media by reducing the barriers to harness its full potential, Government support and awareness generation for the clientele/stakeholder.

**Suggestions for future research**

1. The present study was conducted with limited number of organizations and sample size. In order to derive wider generalizations a study could be conducted with more number of government, non-government, private/others organizations along with more number of institutions for State Agricultural University.

2. In the light of the findings of the present study, it is also suggested to conduct a detailed study on the factors responsible for the utilisation of advanced communication media.

3. It is also suggested that encouragement of utilisation of advanced communication media by the villagers pioneered by different organisations (such as MANAGE, Indian Tobacco Company and its innovation e-choupal etc.) should be studied case wise to provide a brief idea related to possibilities of advanced communication media becoming a global media for prosperity.

Non-government organizations as well as government institutions and departments should also encourage their officials to utilise these advanced communication media exclusively for rural development. Government’s e-governance scheme going on in various state should also be critically studied, analysed and evaluated. Also, the pilot tested several e-governance/ICT initiatives
such as RML, IFFCO IKSL, Gyandoot, Bhoomi, Cyber Extension, Expert System should be objectively analysed and elucidated for understanding and reducing the constraint, employing it in qualitative and measurable terms and for their mass replication for agricultural and rural development.