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Maladies and Remedies in Using Information and Communication Technology Tools for Agricultural Information in Karnataka

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Authors' contributions

This work was carried out in collaboration among all authors. Author Manjuprakash designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors HP and NS managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

The research was conducted to identify the maladies faced by the farming community in Koppal district of Karnataka state and to get the remedies for the problems by the respondents. The exploratory study was carried out in Koppal district of Karnataka state. Total of 120 respondents were investigated using pre tested interview schedule and the sample was selected using multistage random sampling. Four taluk as were considered for the study. *Ex post facto* design of research was followed. The statistical tools such as frequency, percentage and further garret ranking were used to rank the maladies and remedies based on the interaction with the respondents. Lack of adequate skills in using ICT tools (89.20%), high cost of ICT tools (45.80%) and Fear of using modern gadgets

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or internet (25.0%) were the most severe technical, economic and socio-physical constraints experienced by the respondents. More training programme on how to use ICT (87.50%), opening of computer information centres at every village (68.33%) and provision of market information and website in reach of farmers (62.50%) were the suggested solutions to the identified constraints to the use of ICT in descending order. Unlocking the constraints to the ICT via the identified way out will enhance the livelihood of the respondents via adequate use of information.

Keywords: Farming community; ICT; maladies and remedies.

1. INTRODUCTION

The increased demand for food grains can be met only with sincere efforts in agricultural research and extension. Singh et al. [1]. In order to supplement the efforts of extension activities Information and Communication Technology (ICT) is playing an important role. ICT is growing at a faster rate to cater the need and demands of the farming community by implementing the ICT initiatives to overcome the problems of acquiring information in general and agricultural information in particular with respect to the farmers. Though there are numerous ICT initiatives such as Kisan Call Centre, Krishi Marata Vahinin in Karnataka, Kisan Suvida Mobile App of Indian Council of Agricultural Research (ICAR) at central as well as at the various state governments, farmers still have some obstacles to access these ICT tools and services. The Mass Medias like , radio, newspapers and internet are trying to provide best knowledge to the farmers in which lack of time, lack of power supply, unsuitability of broadcasting time were the major constraints faced by the farmers to access the available ICT for agricultural information as opined by Sridevi [2].

According to Verma et al. [3], recent advancements in Information and Communication Technologies (ICTs) coupled with its gradual and regulated expansion has changed the way information is retrieved, processed, stored and communicated among different stakeholders. According to Sankri [4] a quite numbers of portals that disseminate agricultural information exists, however, the sites were needed to be updated with trending pest and disease control agrochemicals.

1.1 Need of Agricultural Information

Information has been described as the fifth need of man ranking after air, water, food, and shelter. Everyone needs information about everything even in his daily life" [5]. Access to accurate, timely, and reliable information plays a crucial role in adoption of appropriate agriculture technology [6]. However, farmers face new challenges due to lack of information on how to deal with various issues of climatic variability, market improbability, new technology etc. Agriculture mainly depends on the monsoon and the prediction of the monsoon is difficult these days hence, Agro-met advisory services are being catered by various institutions. The emergence of pest and diseases leads to loss of crop thereby the reduction in the income of the farmers hence, the proper remedy to overcome such problems and the relevant information need to be communicated at a right time as the operations need to be carried out in time.

1.2 Factors Restricting the Use of ICT

Kante et al. [7] identified that there are some factors affecting the use of ICTs by farmers in the access to and use of agricultural input information relative advantage, compatibility, simplicity, observability, social influence and information quality of ICTs are positively affecting while the ICTs service's cost is negatively affecting its use on agricultural input information.

According to Vosough et al. [8] the successful ICT introduction and use is multidimensional and thus depends on the individual factor. It appears that age, education and knowledge level of ICT, the amount of land under cultivation, distance to ICT center, number of pieces of agricultural land, experience in cultivation are factors that significantly influence the adoption of ICT by farmers. In general, younger and more educated farmers with more land under cultivation, who have access to ICT centers in rural, have a greater tendency of using ICTs.

1.3 Solutions to Overcome the Problem

Despite the penetration of mobile phones to the nook and corners of India, farmers still find it difficult to purchase and maintain expensive android sets to access internet and other android

apps for agriculture. Added to the above was the lack of electricity for charging mobile phones and poor network coverage among others were the constraints enlisted by Nyamba and Mlozi [9]. Analysing maladies is one of the important components of social science research. Constraints are the impediments and without understanding constraints and finding the ways and means of solving them, it is impossible to enhance the participation of the respondents in any of the development schemes. The Governments at the centre as well as at the state levels should create awareness among the farmers regarding the facilities and importance of ICTs in agriculture and in addition youths of India need to be trained in what and how of the technologies so that they are acquainted with the adoption and make best use of the available ICTs in agriculture. With these background the study was conducted to identify the problems faced by the farmers of Koppal district of Karnataka state and the suggestions were sought from the same to overcome the problems such as lack of awareness and adequate skills in using ICTs.

2. METHEDOLOGY

Koppal district of Karnataka was considered as the study area based on the familiarity of the researcher and local dialect. Multi stage random sampling method was used to select farmers in all the four talukas of Koppal district. The steps followed were

1. Sampling frame was chosen considering the interest of the population of the intended
2. Select the sampling frame of relevant separate sub-groups. This was done from related, different discrete groups from the sampling frame chosen in the previous step
3. Second step was repeated
4. Variation probability sampling was used to choose the respondents of the sample frame

Two villages were randomly selected from each taluka, constituting of eight villages in total. 15 farmers from each of the selected villages were selected at a random and thus comprising of total 120 respondent farmers for the study. Ex-post facto research design was employed in the study as the research doesn't have any control on the variables.

The primary data was collected in Koppal district using well designed and pre-tested interview schedule in non-sample area of Koppal district. The list of nine maladies were listed with the response option of Yes or No. Moreover, the remedies were suggestions made to curtail the major constraints faced by the respondents in the utilisation of ICT. The data collected was analysed through proper statistical tools such as frequency, percentage analysis and garret ranking was used to give rank orders to maladies and remedies.

3. RESULTS AND DISCUSSION

The constraints in using ICT were categorized into three and each of the groups was ranked in order of severity among the respondents as shown in Table 1.

3.1 Technical Factors

It is evident from Table 1 that over whelming majority (89.20%) of the respondents faced lack of adequate skills in using ICT tools as a major constraint while more than three-fourths (78.00%) of the respondents were unable to use ICTs due to their being un aware of t ICT tools. Other technical constraints in order of importance include lack of trainings on ICTs usage (68.00%). The finding of this study was in line with that of Narula et al. [10].

Most of the respondents felt that lack of adequate skills in using ICT tools and awareness about ICT tools are major constraints. Since, few respondents were familiar with ICT tools and ICT enabled extension services and others do not have basic awareness about ICT and services. Most of the respondents were interested in accessing ICT enabled extension services also expect trainings on ICT usage oriented activities. Only few of the respondents were not interested in using and participating in ICT enabled extension services as they didn't know the importance and need of ICT.

3.2 Economic Factors

The outcome of this study (Table 1) shows that less than half (45.80%) of the respondents felt that, high cost of ICT tools was the most serious economic constraint to the use of ICTs. This is closely followed by high cost of internet charges (41.70%).

Table 1. Distribution of respondents based on the maladies in using ICT tools for agricultural information (n = 120)

S. No.	Items	Yes		No	
		Frequency	Percentage	Frequency	Percentage
Technical Factors					
a)	Lack of adequate skills in using ICTs	107	89.20	13	10.80
b)	Lack of awareness of ICT tools in agriculture	78	65.00	42	35.00
c)	Lack of trainings on usage of ICT tools	68	56.70	52	43.30
d)	Lack of reliable and useful content online	7	05.80	113	94.20
Economic Factors					
a)	High cost of ICT tools	55	45.80	65	54.20
b)	High cost of internet charges	50	41.70	70	58.30
Socio-psychological Factors					
a)	Fear of using modern gadgets or internet	30	25.00	90	75.00
b)	Traditional bounds of the village	12	10.00	108	90.00
c)	Taboos on adopting and using ICTs in agriculture	4	3.30	116	96.70

Respondents opined that most of the ICT tools are of high cost, which a poor farmers may not be able to afford for t use. Hence, this may hinder the respondents from accessing most of the ICT enabled extension services. Coupled with the high cost of the ICT tools was the high cost of internet facility, which had hinderer the respondents in utilising their ICT tool for assessing agricultural information.

The results are in line with the results of Nyamba and Mlozi [9], who also indicated that mobile phones were too expensive.

3.3 Socio-psychological Factors

Due to the constraints of insufficient e skills and knowledge on ICT tools as identified earlier by the study, one-fourth (25.00%) of the farmers feared to use modern electronic gadgets or internet as revealed in Table 1. Other socio-psychological factors that hinder the use of the respondents ICTs utilisation was traditional bound of the village as indicated by (10.00%) of the respondents while the least socio-psychological constraints to the use of ICT tool identified by very meagre (3.30%) of the respondents was taboos followed in the village or community. The same maladies were reported by Williams and Agbo [11], who identified technical, infrastructural, financial and institutional constraints to ICT utilisation in similar study.

3.4 Remedies Suggested by the Respondents

The remedies for the problems identified by the respondents (Table 1) was presented in Table 2 in descending order.

Table 2. Distribution of respondents based on the suggested solutions to the constraints to ICTs use (n = 120)

S. No.	Suggested solutions to the constraints to ICTs use	Frequency	Percentage
1.	Regular training programmes on usage of ICT	105	87.50
2.	Opening of computer information center at every villages	82	68.33
3.	Providing market information and websites in reach of farmers	75	62.50
4.	Farmers should be convinced to switch over to usage of ICT by demonstrations and meetings	68	56.66
5.	The information provided through ICT should be in line with the needs of the farmers	62	51.66
6.	Farmers should be made aware of information available on online	60	50.00
7.	The content available on websites should be in local or regional language	54	45.00
8.	The existing ICT projects should work with the farmers	47	39.16
9.	KVK should impart skills in usage of ICT tools through training	38	31.66

It could be observed from Table 2, that the majority (87.50%) of the respondents suggested more training programme on how to use ICT in order to alleviate the technical problem of inadequate skill (89.20%) and training (56.70%) hindering the utilising ICT tool for agricultural information.

The results are on par with the results of Karuppasamy [12], who concluded that the respondents suggested organization of more computer literacy programmes.

More than two-third (68.33%) of the respondents suggested that opening of computer information centre at every villages, so that it becomes easy for the farmers to have access to internet and get the help of the centre persons accessing the information, so that the use of ICT tools will not be hindered due to lack of usage skills of farmers.

The result in Table 2 further reveals that nearly two-thirds (62.50%) of the respondents indicated the provision of market information and website in reach of farmers as a solution to the technical constraint to the use of ICT as identified earlier by the study (Table 1). The reason for the suggestion might be due to the respondents low awareness on agricultural websites (56.66%; Table 1) and hence the need to switch over to usage of ICT by conducting demonstrations and meetings. Notably, almost half (51.66%) of the respondents advised that, the information provided through ICT should be in line with t the farmers' felt need, for enhancement of the information's relevance and understanding. Exactly half (50.00%) of the respondents suggested that farmers should be made aware of information available on online, as majority (65.00%) of the farmers are unaware of the existing ICT projects and services.The results of this study are similar with that of Sankri [4], who affirm the need to create awareness of agricultural information via ICT for the farmers.

Less than half (45.00%) of the respondents suggested that content should be made available in local or regional language this may be due to the low educational status of the farming community. 39.16 per cent indicated that the existing ICT projects should work along with the farmers (participatory mode), so that the farmers will take active part and encouraged to use ICT. In addition 31.66 per cent of the farmers suggested that Krishi Vigyan Kendras (KVKs) should impart skills in using ICT tools through planned training, the reason behind this suggestion may be because the lack of skills in using ICT tools is one of the major constraints faced by the farmers, and providing the trainings will help them overcome from this problem.

4. CONCLUSION

Over whelming majority of the respondents faced lack of adequate skills in using ICT tools as a major constraint. More than three-fourths of the respondents faced lack of awareness about ICT tools as a second most constraint followed by lack of trainings on usage of ICT tools. Less than half of them felt that, high cost of ICT tools as major constraint followed by high cost of internet charges were the economic factors contributing as a constraints in using ICT tools and services. One-fourth of the farmers feared to use modern electronic gadgets or internet.

Majority of the respondents suggested that they expected more training programme on how to use of ICT. Around two-third of the respondents suggested that opening of computer information at every villages. Similar proportion of the respondents hinted that providing market information and website in reach of farmers. About half of the respondents expressed that they faced problem of language in obtaining the information, the content should made available in simple and understandable local language.

5. RECOMMENDATIONS

In order to make the success of the initiatives by the governments either by central or by states creation of awareness among the end users in of paramount important, purchase of ICTs or gadgets is of costly to the small and marginal farmers hence, government may also think of providing android mobile phone at a subsidised rate so that the reach of the initiatives and rate of adoption of the transferred technology will be high.

Proper evaluation of the existing ICT initiatives is also necessary to see to it that the very purpose of the objectives of the initiative is met or not. If not the appropriate measures to be taken to see that the initiative is best used by the end users.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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