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Sunil Kumar
Ph.D. Scholar, Division of Agricultural Extension, ICAR-Indian Agricultural Research Institute, New Delhi, India

V Sangeetha
Scientist, Division of Agricultural Extension, ICAR-Indian Agricultural Research Institute, New Delhi, India

Premlata Singh
Principal Scientist & Head, Division of Agricultural Extension, ICAR-Indian Agricultural Research Institute, New Delhi, India

R Roy Burman
Principal Scientist, Division of Agricultural Extension, ICAR-Indian Agricultural Research Institute, New Delhi, India

Arpan Bhowmik
Scientist, Division of Design of Experiments, ICAR - Indian Agricultural Statistical Research Institute, New Delhi, New Delhi, India

Stakeholders' perception about content and design of rice knowledge management portal (RKMP)

Sunil Kumar, V Sangeetha, Premlata Singh, R Roy Burman and Arpan Bhowmik

Abstract
Information and communication technology (ICT) fasten the farmers decision-making processes and growing their purview for providing timely, accurate, relevant information to the farmers. In India an initiatives focussing on rice farmers was developed namely, Rice knowledge Management Portal (RKMP) by Indian institute of Rice Research(IIRR) Hyderabad, to accumulate diversified information and disseminated properly to the stakeholders. The study was conducted in purposively selected districts of Nalgonda in Telanagan and West Godavari in Andhra Pradesh state, with aim to assess utility, perception and satisfaction of information provided by RKMP. From district 40 farmers and 30 scientists and extension personnel were selected using multistage random sampling technique, so total 140 respondents were selected. Perception about content of the portal revealed that it is related to improved cultivation practices as strongly perceived by majority of farmers, 57 per cent of scientists strongly perceived that it is in simple language and 70 per cent of extension personnel perceived that it is free of spelling errors. Further, Perception about design of portal revealed that 65 per cent farmers strongly perceived that videos-length were appropriate. 60 per cent scientists strongly perceived that speed of uploading and downloading, 56 per cent extension personnel strongly perceived that links were accessible. This study provides guiding for other crops to initiate strategies and policies for ICT oriented agricultural information packages; motivate stakeholders to apply at their farms for sustainable agriculture and development.

Keywords: Perception, Content and design, ICT, Rice farmer, RKMP

Introduction

In present changing scenario, Information as a critical resource for socio-economic development enables people to make informed choices towards improving their livelihoods (Matovero, 2006) [12]. Several attempts have made to fulfil the information need of the farmers. Scientist community has made several researches to solve the problems of farmers regarding crop cultivation. Farmers should be prepared with the needed and right information to confront different challenges. Through the advancement in information and communication technologies (ICTs), internet is providing that information to all the users. But the problem of credibility of information always remains in the mind of farmers. Farmer mainly getting information through local available resource person and some of the agriculture related organization like KVK, but private players are more in agriculture and they are providing the information through latest tools like mobile and internet.

although there is no agreed upon list of criteria outlining what usability includes, people generally agree that a usable website is accessible, appealing, consistent, clear, simple, navigable and forgiving of user mistakes (Murray *et al.,* 1999). Knowledge management (KM) is considered to be very difficult task in Indian agriculture and become one of the foremost agendas in many research institutions and organizations (Alavi & Leidner, 2001; Tan & Wong, 2015) [1, 20]. It constitute of dynamic and continuous set of the process which enables the organization enhancement and expands their innovation processes (Karadsheh, 2009) [10]. The goal of Information and Communication Technology (ICT) is to provide the benefits of information revolution to the rural masses by enhancing farming efficiency, farm productivity and farmers' income (Sangeetha *et al*, 2015) [18]. ICT initiatives should focus on providing services such as question-and-answer sessions, cooperative-related accounting methods, market information, input prices/availability and early warning systems for disease and pest problems (Meera *et al.*, 2004) [13].

Content always play an important role in using the portal or different sources and increases the usability among stakeholders of agriculture.

Correspondence
Sunil Kumar
Ph.D.Scholar, Division of Agricultural Extension, ICAR-Indian Agricultural Research Institute, New Delhi, India

External visual manipulations of text, such as a bolded font, can act as a perceptual cue to direct a readers' attention (Hartley, 2004) [9] and signal that the bolded instructional content may require deliberate, intentional processing in order to lead to meaningful learning at part of learner/reader. Human visual perception is extremely selective (Baddeley, 1992) [3] and compared to equivalent verbal input, visual stimuli provides better processing cues to help shape the learner's/ readers perception of content (Baggett & Ehrenteucht, 1982) [4]. There is a need to create visually pleasing layouts and design of the portals so that it can fetch the attraction and hold the learner's attention and communicate information so that it is easily understood and remembered. Several initiatives were taken by ICAR to digitize the information so that it can be use at farm level more efficiently. In process of that, Rice is a staple crop of India which is contributing more to the agricultural production. An effort has made by Indian Institute of Rice Research along with consortium partners to cater the information need of the major stakeholders of agriculture to get all related information regarding rice. For this they built Rice knowledge management portal (RKMP). Under this portal for different stakeholders separate domain has made. So by using portal different stakeholders can search information regarding their needs. RKMP provides many specific queries for rice research and cultivation, such as variety selection, disease management, pest and site specific frequently asked questions (Das *et al.,* 2013) [6]. The efforts paved the way to reduce the gaps of the growing "digital information divide" specifically in the important cereal crop of the country namely rice (Meera *et al.*, 2014) [19]. The content of the portal is contributed by different major rice research organisations and a team of scientists is validating the content and after that it is uploaded on portal. Anyone from anywhere in the country can get information using this portal. RKMP is one of the knowledge management initiatives to solve the rice related information problem and acting as one stop solution and has been accepted by the users in a suitable manner.

Materials and methods
Present study was conducted in purposively selected state of Telangana and Andhra Pradesh for locale of study. RKMP project was implemented in these states of Andhra Pradesh (rice bowl of India) and Telangana. Since, Indian Institute of Rice Research (IIRR) is the host institute and implies to understand how RKMP by using its knowledge repository can disseminate information to stakeholders (Farmers, Scientists and Extension personnel) for managing timely and relevant information. A Multi-stage random sampling technique was used, and a structured questionnaire which gathered information on to study the perception of stakeholders of stakeholders about content and design of the portal. The *ex-post* facto research design was used in the study. From each selected state, one district was selected purposively based on implementation of RKMP Project. In Telangana state, Nalgonda district and in Andhra Pradesh West Godavari districts were selected purposively as the project being implemented in these districts since its inception. For the detailed survey, a total 80 farmers were selected from these two states. For scientists, 15 respondents were selected for the survey from two selected organizations, Indian Institute of Rice Research (Hyderabad) and Andhra Pradesh Rice Research Institute & Regional Agricultural Research Station, (APRRI & RARS) Maruteru, West Godavari District, Andhra Pradesh (Acharya N.G. Ranga Agricultural University). So, total 30 scientists were selected for the study. In case of extension personnel, 15 respondents were selected from each Nalgonda and West Godawari district and thus, total 30 were selected for the survey. Therefore, the study was conducted among 140 stakeholders of RKMP, namely, 80 farmers, 30 scientists, and 30 extension personnel. A *likert* type scale was to measure the responses and frequency and percentage was used to interpret data.

Results and discussion
Farmers' perception always plays an important role in adopting any technology. Farmer's perception was measured on *Likert* scale and flowing results was found. (Table 1)

Table 1: Farmers' perception about content of the RKMP, n=80

S.N.	Statements	Strongly Perceived		Moderately perceived		Least perceived	
		f	%	*f*	%	*f*	%
1	Legible to read	29	36.3	25	31.3	26	32.5
2	Easy to understand	30	37.5	26	32.5	24	30.0
3	In simple language	36	45.0	26	32.5	18	22.5
4	Free of spelling errors	17	21.3	21	26.3	42	52.5
5	Systematically presented	42	52.5	08	10.0	30	37.5
6	Navigate easily	27	33.8	16	20.0	37	46.3
7	Related to improved cultivation practices	46	57.5	13	16.3	21	26.3
8	Sufficient information about rice	20	25.0	42	52.5	18	22.5

Table 1. depicted the results of farmers' perception about content of the portal. It revealed that 58 per cent of farmers strongly perceived that content is related to improved cultivation practices and it was systematically presented (53 %) in simple language (45 %). About 53 per cent of the farmers least perceived that content is free of spelling errors (52 %) followed by easy to navigate (46 %) and systematically presented (38 %). Similar result was found by

LaRose *et al.* (2001) [11] and Burman *et al.,* (2013) [5] who reported that the content must be comprehensive, in simple language and systematic so that it can produce more effect on the part of users. Yadav (2011) [22] found that uploaded content of Agropedia somewhat and aAQUA content was moderately relevant, with high technical words, moderately useful content, with appropriate readability.

Table 2: Scientists' perception about content of the RKMP, n=30

S.N.	Statements	Strongly perceived		Moderately perceived		Least perceived	
		f	%	*f*	%	*f*	%
1.	Legible to read	16	53.3	06	20.0	08	26.7
2.	Easy to understand	17	56.7	05	16.7	08	26.7
3.	In simple language	14	46.7	10	33.3	06	20.0
4.	Free of spelling errors	08	26.7	09	30.0	13	43.3
5.	Systematically presented	16	53.3	10	33.3	4	13.4
6.	Navigate easily	09	30.0	11.0	36.0	10	33.3
7.	Related to improved cultivation practices	13	43.3	09.0	30.0	08	26.7
8.	Sufficient information about rice	15	50.0	10.0	33.0	05	16.7

Table 2. depicted the results of scientists' perception about content of the portal. It reveals that 53.3 per cent of scientists strongly perceived that content was legible to read followed by easy to understand (56.7 %), in simple language (46.7 %), and presented systematically (53.3 %), having sufficient information and related to improved cultivation practices (43.3 %). Whereas 16.7 per cent of the scientists least perceived that content of the portal is legible to read, easy to understand and related to improved cultivation practices.

Table 3: Extension Personnel's perception about content of the RKMP, n=30

S.N.	Statements	Strongly Perceived		Moderately perceived		Least perceived	
		f	%	*f*	%	*f*	%
1.	Legible to read	13	43.3	06	20.0	11	36.7
2.	Easy to understand	13	43.3	07	23.3	10	33.3
3.	In simple language	17	56.73	06	20.0	07	23.3
4.	Free of spelling errors	05	16.7	21	70.0	04	13.3
5.	Systematically presented	12	40.0	14	46.7	04	13.3
6.	Navigate easily	06	20.0	15	50.0	09	30.0
7.	Related to improved cultivation practices	16	53.3	09	30.0	05	16.7
8.	Sufficient information about rice	14	46.7	10	33.3	06	20.0

Table 3. showed the perception by the extension personnel about the content of the RKMP portal. It reveals that 57 per cent strongly perceived that RKMP content is in simple language followed by related to improved cultivation practices 53 per cent and provides sufficient information 47 per cent. About 70 per cent of extension personnel had moderately perceived that RKMP content is free of spelling errors followed by easy to navigate 47 per cent and provides sufficient information about rice 33 per cent. About 37 per cent of the extension personnel has least perceived that RKMP content is legible to read followed by easy to understand (33%). This study was supported by Alter *et al*., (2007) [2] and Forster *et al*., (2012) [8] found that font of content plays an important role in read and learn provided content.

Table 4: Farmer's perception about design of the RKMP, n=80

S. No.	Statements	Strongly Perceived		Moderately perceived		Least perceived	
		f	%	*f*	%	*f*	%
1.	It has good number of visuals	30	37.5	27	33.8	23	28.8
2.	It has appropriate links	41	51.3	29	36.3	10	12.5
3.	Sufficient information is available with pictures	46	57.5	18	22.5	16	20.0
4.	Speed of uploading and downloading is appropriate	42	52.5	12	15.0	26	32.5
5.	Length of videos are appropriate	52	65.0	16	20.0	12	15.0
6.	Audio files are audible and have full information	48	60.0	20	25.0	12	15.0
7.	Web page is not so crowded	48	60.0	12	15.0	20	25.0
8.	Appropriate colours are used	42	52.5	26	32.5	12	15.0
9.	Most of the information are accessible from the home page	13	43.3	10	33.3	07	23.3

Table 4. showed the perception about design of the portal by farmers. It reveals that 65 per cent farmers strongly perceived that length of the videos were appropriate followed by good quality audio files having full information on farming (60 %), and perceived that web page is not so crowded (60 %), and sufficient information is available with pictures (57.5 %), and uploading and downloading speed is appropriate (52.5 %), has appropriate links (51.33 %), with the use of appropriate colours (52.5 %) and most information on portals are accessible from the home page (43.3 %). Present study was supported by Mora (2013) [15] and further Yadav (2011) [22] found that the home page of Agropedia was well organized, simple and attractive.

Table 5: Scientists' Perception about design of the RKMP, n=30

S.N.	Statements	Strongly Perceived		Moderately perceived		Least perceived	
		f	*%*	*f*	*%*	*f*	*%*
1.	It has good number of visuals	14	46.7	08	26.7	08	26.7
2.	It has appropriate links	15	50.0	07	23.3	08	26.7
3.	Sufficient information is available with pictures	18	60.0	08	26.7	04	13.3
4.	Speed of uploading and downloading is appropriate	18	60.0	07	23.3	05	16.7
5.	Length of videos are appropriate	15	50.0	11	36.7	04	13.3
6.	Audio files are audible and have full information	14	46.7	06	20.0	10	33.3
7.	Web page is not so crowded	15	50.0	08	26.7	07	23.3
8.	appropriate colour are used	16	53.3	07	23.3	07	23.3
9.	Most of information are accessible from the home page	17	56.7	08	26.7	05	16.7

Table 5. depicted that 60 per cent of the scientists strongly perceived that sufficient information was available with picture and speed of uploading and downloading was appropriate followed by major parts of information on portals are accessible from the home page (56.7 %), having use of appropriate colours (53.3 %), has appropriate links (50 %), length of videos are appropriate (50 %), web page is not so crowded (50 %) and audio files are audible and have full information (46.7 %). About 36.7 per cent scientists moderately perceived that 'length of videos in RKMP are appropriate' and 26.7 per cent least perceived that it has good number of visuals and has appropriate links. Similar result was observed by Diemand-Yauman *et al.* (2011) [7]. Thompson *et al.,* (2013) [21] reported that text presentation to a less familiar format makes it less perceptually fluent, leads to better memory of the written material for the respondents.

Table 6: Extension personnel's' perception about design of the RKMP, n=30

S.N.	Statements	Strongly perceived		Moderately perceived		Least perceived	
		f	*%*	*f*	*%*	*f*	*%*
1.	It has good number of visuals	14	46.7	11	36.7	05	16.7
2.	It has appropriate links	17	56.7	08	26.7	05	16.7
3.	Sufficient information is available with pictures	16	53.3	08	26.7	06	20.0
4.	Speed of uploading and downloading is appropriate	06	20.0	12	40.0	12	40.0
5.	Length of videos are appropriate	14	46.7	13	43.3	03	10.0
6.	Audio files are audible and have full information	15	50.0	09	30.0	06	20.0
7.	Web page is not so crowded	14	46.7	07	23.3	09	30.0
8.	Appropriate colors are used	15	50.0	09	30.0	06	20.0
9.	Most information are accessible from the home page	42	52.5	21	26.3	17	21.3

Table 6. illustrated that 57 per cent extension personnel strongly perceived that 'links are accessible followed by sufficient information is available with pictures' (53.3 %), 'major parts of information on portals are accessible from the home page' (52.5 %), 'videos are appropriate' (50 %), 'audio files are audible and have full information' (50 %), 'web page is not so crowded' (46.7 %), 'use of appropriate colours' (50 %). About 43 per cent extension personnel moderately perceived that 'length of videos are appropriate followed by speed of uploading and downloading is appropriate' (40 %) and 'it has good number of visuals' (36.7 %). About 40 per cent extension personnel least satisfied about 'speed of uploading and downloading' followed by 'web page is not so crowded' (30 %) and 'most information are accessible from the home page' (21 %).

Conclusion
RKMP is one of the knowledge management initiatives to solve the rice related information problem and acting as one stop solution and has been accepted by the users in a suitable manner. Perception about content of the portal by various stakeholders was studied and it was found that majority of farmers strongly perceived that RKMP content is related to improved cultivation practices, among scientists, majority strongly perceived that content is in simple language and majority of extension personnel moderately perceived that content is free of spelling errors. Perception about design of the portal was studied and it was found that most of the farmers strongly perceived that length of the videos were appropriate. Among scientists majority strongly perceived that sufficient multimedia content is available and speed of uploading and downloading is appropriate, and most of extension personnel strongly perceived that links were accessible. RKMP has provided a way to bridge the gap of growing digital divide for all the stakeholders of rice farming in the country.

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