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Farmers' Preferences of E-Learning Courses: Implications for Extension Professionals

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ABSTRACT

Reaching the unreached farmers necessitates use of information and communication technology by the extension machinery. Farmers, amidst high acceptability and spread of mobile phones and computer technology, can be trained through virtual classrooms. With the advent of e-learning, more options in terms of teaching methods have come up; but, at the same time, extension professionals' job became even more discreet. This study analyzed the farmers' and extension personnel's perspectives to evaluate the usability of an e-learning course and farmers' preferences about e-learning courses. The findings implicate crucial aspects to be given emphasis while designing an e-learning course like length of the course, its difficulty level and usefulness of provision of self-assessment. Farmers' existing knowledge should be the basis of content of the course and topic of immediate use should be chosen for effective learning. Farmers become reluctant to learn things that cannot be immediately put in to use; therefore, relevant and local examples are must to set the tone for better understanding of concepts. Moreover, the course should present information in a story format demanding frequent participation of learners. Pleasant and attractive visual design motivates farmers to begin with learning; whereas, elements promoting enquiry and thinking are necessary for e-learning to become self-sufficient in imparting learning.

Keywords: E-learning, Farmer, Multimedia, Motivation, Extension, Awareness

INTRODUCTION

Agricultural extension personnel, in India, are often blamed for being unable to reach the farmers; where, the farmers to extension workers ratio can be said to be around 2879:1 (Maity *et al.*, 2015). Reaching 6.38 lakh villages and its farmers does not seem practical enough without the use of latest information and communication technologies (ICTs). Hence, e-learning seems specifically suitable when a large amount of content has to be delivered to a widely dispersed large audience with homogeneous background knowledge on a specific topic. Similarly fits to situation where the content has to be reused in future, when learners are limited by their mobility or daily routine, when learners lack listening or reading skills, when they at least have a computer or other gadgets used for learning and basic skills to use internet. Motivation to learn is the biggest hindrance in self-learning; thus, when the learner is himself/

herself is motivated enough to learn and confident of moving further with the course, e-learning seems more practical. Moreover, when purpose is to develop knowledge and attitude rather than skills and when the course is intended to meet long-term training needs, e-learning courses can be helpful. Experience of one such initiative of Digital Green, a system which deploys participatory videos for dissemination of technology, shows that time constraint and low literacy among farmers pose severe constraint in the expected functioning and impact (Afroz *et al.*, 2014). But, if found useful and effective, farmers would be ready to pay for purchasing such self learning tools (Tiwari *et al.*, 2013).

Thus, an attempt was made to study the preferences of farmers about e-learning courses, considering e-learning as an effective means to impart learning, which can become a lifelong learning in the form of e-portals,

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e-mentoring, e-conferencing, online education, etc. (Canter, 2012; Chinyio et al., 2016; Condruz-Bacescu, 2013; Hussain, 2013; Ionescu et al., 2011; Khalil, 2013; Maioreescu et al., 2013; Micu et al., 2012; Sung et al., 2014; Thompson et al., 2010 and Varga et al., 2013). The present study examines farmers' preferences of e-learning material in terms of duration and length of e-learning course, difficulty level, and, usefulness and difficulty level of assessment. It evaluates the usability of e-learning material from farmers' and extension personnel's perspective and suggests designing strategy for the future.

MATERIALS AND METHODS

The study used exploratory field research design to determine the awareness level of farmers in selected districts of Maharashtra about "World Trade Organization (WTO) and its Agriculture related issues" using a standardized awareness test with Cronbach Alpha coefficient 0.833 (Kerlinger, 1964). The state of Maharashtra was specifically chosen because it has a large agricultural diversity and numbers of agricultural commodities are exported from the state. Similarly, the topic, "World Trade Organization (WTO) and its Agriculture related issues" was particularly chosen because it was assumed to be a novel but important piece of information for the farmers. An awareness test was conducted with a sample size of 60 farmers. The awareness test score was expressed in awareness index [(score obtained by the respondent / maximum possible score) X 100].

Considering the awareness level, the universe of content for the development of e-learning material was defined. The e-learning material was developed in *Marathi* language with Microsoft Power Point (2010) using basic guidelines of content structuring and principles of composition. The strategy for presenting the information effectively using multimedia objects was decided based on the principles of extension education (FAO, 2011). Farmers' perception of the course considering its length, difficulty, assessment etc. was studied with 40 farmers. Finally, the usability evaluation of the course was done for systematic testing of the training material, for which usability evaluation scale of Zaharias (2004) along with a semi-structured schedule was used. It was done with a sample of 40 farmers and 40 extension personnel.

RESULTS AND DISCUSSION

The awareness study revealed that majority (93.33%) of the respondents had very low level of awareness (i.e.

awareness index < 20%) and the rest (6.67%) had low level of awareness (i.e. awareness index between 21-40%) about WTO and its agriculture related issues. Thus, the course curriculum focused on introductory aspects of the topic with basic information and relevant examples. Setting background with international trade related issue concerning local farmers was used to establish the importance of the topic as well as the course.

While designing, basic guidelines of content structuring and principles of composition were followed to enhance the visual and emotional impact of the design. Furthermore, basic principles of extension education were used while storyboarding, to define the strategy for effective delivery of the content. Assessment was an integral part of the course, not only for self-appraisal but also for reinforcing the learning. Thus, a prototype e-learning course "*Jagতিক Vyapar Sangathna: Ek Parichay* जागतिक व्यापार संघटना (डब्ल्यू.टी.ओ.): एक परिचय" was developed using Microsoft Power Point (2010) in Power Point Show (.pps) format.

Farmers' perception of the e-learning course: The results revealed average time taken to thoroughly go through the course was 20 minutes and none felt like leaving the course in between. Although, the course was found concise, majority (67.5%) of the respondents found it to be lengthy and few of them (32.5%) felt it to be of appropriate length (Table 1). The course was rated of appropriate difficulty level by 40 per cent and difficult by 60 per cent of the respondents. None of them reported to easy. The assessment, at the end of the course, was found either useful (60%) or very useful (40%) for learning by the farmers. Where, majority (75%) reported assessment to be of appropriate difficulty, 25 per cent respondents found it easy to answer after going through the course. Thus, the assessment was found highly acceptable among the farmers, without even realizing that it meant was to summarize the content and reinforce learning rather than self-assessment. As a whole, majority (67.5%) rated the course as good and the rest (32.5%) rated it as very good course (Table 1).

Farmers liked the simplicity, presentation in electronic form, background set before forwarding concepts, visuals, audio support, given examples, assessment and storytelling format. Whereas, few farmers also reported dislikes regarding topic being irrelevant and of no immediate use. No technical difficulty was reported by

Table 1: Farmers' perception of the course (n=40)

Aspect	Frequency (%)				
	Too lengthy	Lengthy	Appropriate	Short	Very Short
Length of course	0	27 (67.5%)	13 (32.5%)	0	0
Difficulty of course	Too easy	Easy	Appropriate	Difficult	Too difficult
	0	0	16 (40.0%)	24 (60.0%)	0
Usefulness of Assessment	Very useful	Useful	Can't say	Not useful	Waste of time
	16 (40.0%)	24 (60.0%)	0	0	0
Difficulty of Assessment	Too easy	Easy	Appropriate	Difficult	Too difficult
	0	10 (25.0%)	30 (75.0%)	0	0
Overall rating of course	Very good	Good	Neutral	Bad	Very bad
	13 (32.5%)	27 (67.5%)	0	0	0

the farmers, as no special software was required to run the course, simple click on the links would take the learner to a specific page in the course and a learner would easily know when an action was required. Thus, the e-learning course should better be designed using software that is available in any computer like Microsoft PowerPoint etc. All the farmers (100%) responded affirmatively when asked about the course meeting given objectives and expectations, and to recommend the course to friends and colleagues. At the same time, they did not express the wish to know more about related topics, probably because they found the topic irrelevant or information thoroughly covered.

Usability evaluation of the course: The e-learning course “*Jagtik Vyapar Sangathna: Ek Parichay* जागतिक व्यापार संघटना (डब्ल्यू.टी.ओ.): एक परिचय) was tested for usability evaluation among 40 farmers and 40 agricultural extension personnel. About the content of the course, a large majority (90%) of the extension personnel strongly agreed that the vocabulary and terminologies were appropriate for the learners (Table 2). Similarly, among farmers, 40 per cent strongly agreed and 60 per cent agreed about the appropriateness of the vocabulary (Table 2). Further, strangely, all the farmers (100%) and half (50%) of the extension personnel strongly agreed that abstract concepts were illustrated with concrete and specific examples; whereas, half of the extension personnel just agreed to it. Probably, the extension personnel might have thought about explaining the concepts in better ways. About learning and support, majority of the farmers (60%) agreed that the course offered tools to support learning; contrarily, 30 per cent of both farmers and extension personnel were neutral in response and 10 per cent

extension personnel even disagreed with it. Probable reason for disagreement could be that extension personnel hoped for more details on the topic and notes or handout to take home. At the same time, majority of farmers (80%) agreed and majority of extension personnel (70%) strongly agreed that the course allowed them to learn on their own. Use of local language, relevant examples and ease of operation might have made the respondents comfortable with the course.

All the farmers and extension personnel (100%) strongly agreed that the fonts used in the module were easy to read, learners always knew where they were in the course, the course allowed them to leave whenever desired and easily return to the closest logical point and the course was free from technical errors. Majority (80%) of the farmers agreed and the rest 20 per cent strongly agreed that the course uses elements that gain attention and maintain motivation of the learner. Similarly, half of the extension personnel (50%) agreed and 40 per cent strongly agreed about the use of interactive elements; whereas, few (10%) were neutral about it. Plausible explanation for neutral response could be that the module involved elements specially focused only on farmers.

About self-assessment and learn ability, all the extension personnel (100%) and 30 per cent of the farmers strongly agreed and majority (70%) of farmers agreed that they could successfully start, learn, complete the entire course and assess their learning with given instructions. Newness to e-learning might have varied the response from farmers. When asked whether the course incorporates novel characteristics, majority of (60%) farmers agreed and 40 per cent strongly agreed; whereas, majority of extension personnel (90%) strongly agreed

Table 2: Usability evaluation of e-learning course by farmers and extension personnel

Criteria	Farmers (n=40)					Extension Personnel (n=40)				
	Frequency (Percentage)					Frequency (Percentage)				
	SA	A	N	D	SD	SA	A	N	D	SD
Content										
Vocabulary and terminology used are appropriate for the learner	16(40)	24(60)	0	0	0	36(90)	4(10)	0	0	0
Abstract concepts (principles, rules etc.) are illustrated with concrete, specific examples	40(100)	0	0	0	0	20(50)	20(50)	0	0	0
Learning and Support										
The course offers tools (taking notes, resources etc.) that support learning	4(10)	24(60)	12(30)	0	0	4(10)	20(50)	12(30)	4(10)	0
The course allows an individual to learn on his own	8(20)	32(80)	0	0	0	28(70)	12(30)	0	0	0
Visual Design										
Fonts (Style, color, saturation, contrast) are easy to read	40(100)	0	0	0	0	40(100)	0	0	0	0
Navigation										
Learner always knows where he is in the course	40(100)	0	0	0	0	40(100)	0	0	0	0
The course allows the learner to leave whenever desired, but easily return to the closest logical point in the course	40(100)	0	0	0	0	40(100)	0	0	0	0
Accessibility										
The course is free from technical problems (hyperlink errors, programming errors, etc.)	40(100)	0	0	0	0	40(100)	0	0	0	0
Interactivity										
The course uses elements that gain attention and maintain motivation of the learner	8(20)	32(80)	0	0	0	16(40)	20(50)	4(10)	0	0
Self-assessment and Learn ability										
Learner can successfully start, learn, complete the entire course and test what he learned using only given instructions	12(30)	28(70)	0	0	0	40(100)	0	0	0	0
Motivation to learn										
The course incorporates novel characteristics	16(40)	24(60)	0	0	0	36(90)	4(10)	0	0	0
The course stimulates further inquiry	0	16(40)	24(60)	0	0	32(80)	8(20)	0	0	0
It is enjoyable and interesting	12(30)	28(70)	0	0	0	32(80)	8(20)	0	0	0
It provides learner with frequent and varied learning activities that increase learning success	0	8(20)	16(40)	16(40)	0	12(30)	24(60)	0	4(10)	0

(SA-Strongly agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly disagree)

and 10 per cent agreed. Similarly, majority (80%) of extension personnel strongly felt that the course stimulated further inquiry. Contrarily, majority (60%) farmers were neutral in response, probably because they might have not realized the significance of impact of international trade on domestic agricultural market. Both the respondents found the course to be enjoyable and interesting; at the same time, both the respondents gave varied response when asked about ability of course to provide frequent and varied activities that increase success of learning. When majority of extension personnel (60%) agreed to it and 10 per cent disagreed; 40 per cent farmers were undecided and 40 per cent disagreed. Plausible reason

Table 3: Comparison of perceptions of farmers and extension personnel

Criteria	Farmers		Extension personnel	
	MS	SD	MS	SD
Content	4.70	0.47	4.70	0.47
Learning and Support	4.00	0.56	4.10	0.87
Visual Design	5.00	0.00	5.00	0.00
Navigation	5.00	0.00	5.00	0.00
Accessibility	5.00	0.00	5.00	0.00
Interactivity	4.20	0.42	4.30	0.67
Self-assessment and Learnability	4.30	0.48	5.00	0.00
Motivation to learn	3.70	0.87	4.60	0.53
Average	4.34		4.68	

(MS-Mean Score, SD-Standard Deviation)

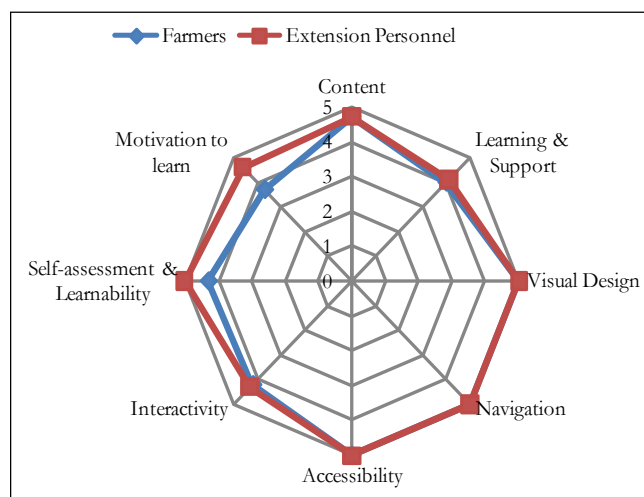


Figure 1: Comparison between mean scores under usability evaluation

behind varied response seems to be the difference in perception to visualize the implications of international agricultural trade on domestic agriculture.

The overall mean score of usability evaluation for farmers (4.34 out of 5) and extension personnel (4.68 out of 5) indicates strong agreement among them about the effectiveness of the e-learning course (Table 3 and Figure 1). Although, the standard deviations suggest varied response among the respondents, higher mean scores obtained by the different dimensions of evaluating the course establish its validity.

CONCLUSION

E-learning can neither replace human interaction of traditional learning nor can substitute a good teacher; nevertheless, it can always serve as a powerful tool with the instructors or extension personnel in imparting learning. Sung (2014) recommended appropriate application of well-designed e-learning methodologies in agriculture; therefore, the study attempted to find out the specifics of farmers' preferences about the e-learning course. The findings of the study suggest that the e-learning course should be of smaller length to the extent possible; if not, it should be divided into parts in such a way that each would be able to stand on its own. Moreover, the information only of urgent nature that can be straight away put into practical use should be delivered through e-learning. The self-assessment approach of letting learners try, until they find the right answer to the question, encourages participation and strengthens learning. General assessment approach, in which only right answers are rewarded and a final score sheet is generated, may be avoided with the farmers; as the purpose is to impart learning instead of judging them. Delivering information through electronic means along with multimedia support is highly appreciated by the farmers. Therefore, e-learning courses must be error free and compatible with the local computer without any special requirement of specific or latest versions of software. Furthermore, presenting content in the story form helps retaining learners' attention throughout the course.

Usability evaluation suggests that the e-learning content must be presented with concrete and specific examples for better understanding. The course must be in learners' local language, preferably with audio support in local dialect. Learners' participation can be encouraged with

asking polar questions before putting forward the next concept. Similarly, open ended opinion seeking and thought provoking questions can also be incorporated, provided they do not break the flow of the course delivery. Links provided in the course should be preferably linked to the storyboards within the course to provide ease of operation. Efforts should be made to design e-learning course building upon the existing knowledge and should lead to stimulating further enquiry about the topic. Thus, an e-learning course to be effective, self-paced or instructor-led, should strictly follow learners' needs, interest, education and existing knowledge. It should use a mix of strategies to deliver the information with relevant examples, visuals, audio etc.

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