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Socio-economic profile of livestock farmers and their level of symbolic adoption of fodder production technology as influenced by e-training tools

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Abstract
Information and communication technology in agriculture provides solutions to agricultural challenges. The present study analysed symbolic adoption of year round green fodder production technology by farmers due to e-training tools was analysed. An experimental study was conducted in Dharwad district of Karnataka. Three e-tools viz., powerpoint presentation, video screening and whatsapp videos were developed and used separately for training, each tool for a group of 30 farmers, covering 90 farmers. Whatsapp video was effective (65.18 %) with respect to symbolic followed by video screening (58.51 %) and power point presentation (42.22 %). All the tools were significantly different from each other in influencing the respondents towards mental adoption of technology. Negative and significant relationship existed between annual income and symbolic adoption by video screening and whatsapp video. Education was negatively and significantly related (whatsapp group); farm size and annual income exhibited positive and significant relationship (Powerpoint group) with symbolic adoption.

Keywords: ICT, fodder, video, Powerpoint, whatsapp, Karnataka

Introduction
Information and Communication Technology (ICT) has emerged as a ray of hope with dramatic impact on achieving specific social and economic development goals in the national development. The power of ICTs has reached the villages signalling a new dawn of an easier and faster communication access for the rural people. Rural knowledge connectivity is a new participatory interactive communication process fostered by putting rural communities themselves in the driving seat with facilitators taking the passenger seats (Prasad et.al, 2006). The agricultural and livestock extension services in India is therefore changing rapidly. Integration of new electronic media is rapidly transforming the scenario. The electronic media enabled extension systems are acting as a key agent for changing agrarian situation and farmers' lives by improving access to information and sharing knowledge. Electronic media based agricultural extension brings incredible opportunities and has the potential of enabling the empowerment of farming communities. Extension practitioners are excited to experiment innovative electronic media initiatives. At the same time, it is also a challenge to place rural electronic media infrastructure, developing appropriate content and ensuring sustainability. Keeping all this in mind, a study has been conducted on socio economic profile and symbolic adoption of fodder production technology by farmers through e-training tools.

Methodology
Present study was conducted in Dharwad district of Northern Karnataka. Five villages namely Nigadi, Baada, Mansur, Marewada, and Bogur were selected of which in four villages treatments were administered and one village was kept as control. These villages were purposively selected based on the accessibility to contact farmers who are regularly in touch with IGFRI and were ready to extend assistance for treatment imposition for the study. 'Before-After with control group' experimental design was employed to find out the effectiveness of e-training tools in terms of symbolic adoption. Tools were developed on "year round green fodder production" which was the subject matter selected for the study based on information need analysis. Three e-training tools viz, educational video screening, sharing video through whatsapp and power point presentation-all three having almost same content and similar pictures were developed. These tools acted as treatments for the study. Educational video in Nigadi, power point presentation in Baada and video through whatsapp in Mansur and Marewada villages were administered. Hence, different tools were used as treatments.

The pretest and post-test was administered to treated groups. From each village 30 farmers were selected hence total sample size for the study was 90 and were interviewed for socio economic profile and symbolic adoption.Data was collected through personal interview technique. Collected data were tabulated and analysed by using frequency, percentages, one way Anova and correlation coefficients.

Results and Discussion

Socio economic profile of livestock farmers

Result pertaining to socio economic profile of respondents was presented in table-1. The study revealed that nearly half (44.44%) of the respondents were old (51 years and above), nearly one third (28.89%) respondents were in middle age group (between31 to 50 years) and one fourth (26.67%) respondents belonged to young (18-30 years) age group. Mean age of the respondents was 42.18±1.09 years. The probable reason for this could be that the old aged respondents with good amount of experience in farming might have realized about the less availability of proper feeding resources for livestock to obtain higher milk yield. This could have encouraged them to know more about fodder cultivation. Similar results were reported by Rajanikanth (2013) [17].

Result showed that more thanone-third (30%) of the respondents were illiterate. The probable reasons for this result could be lack of awareness about importance of education and lack of interest and encouragement to attend school. Similar findings were reported by Savitha (2004) [18] and Rajanikanth (2013) [17]. Majority of the respondents (51.11 %) had high level of farming experience. Majority of the respondents belonged to old age group and they might also have resumed farming at early age resulting in more number of years of farming experience. The results were in line with the results of Khode *et.al* (2009) [11] and Ajieh (2014) [1].

Small and semi-medium farmers, together represented 72.55 per cent of respondents. Reasons could be fragmentation of land holdings among family members due to emergence of more nuclear families even in rural areas. Similar findings were reported by Akshata (2014) [2] and Khin Mar Oo (2005). It was found from the results that fifty percent of respondents were grouped under the low annual income group (less than Rs.77433) followed by high (Rs.123100) and medium (between Rs.77433 to 123100) groups. It is quite obvious that respondents with small to semi-medium farm will get low level of annual income and fragmentation of land holdings might be the reasons for these findings. This finding is in confirmative with the findings of Singh and Upadhyay (2006) [19].

Only 38.89 per cent respondents possessed big herd size and the remaining possessed less than 3 Adult Cattle Units. Reasons might be non-availability of space to house more number of animals, medium income of the family, high cost of animals, non-availability of required amount of loan from the banks, less repayment capacity of loan, restricting herd size in accordance with estimated production of crop residues, selling of animals to meet out contingency expenditure of the family, lack of labour facility, shortage of green and dry fodder etc., would have influenced the present findings. The findings were partially in line with the findings of Pushpa (2006), Sowjanya (2014) and Rahman and Gupta (2015) [16].

Nearly half of the respondents (47.78 %) had medium level of extension contact, whereas 32.22 percent of the respondents had low level of extension contact. Only 20.00 per cent of the respondents had high level of extension contact. The probable reasons could be lack of time to approach extension functionaries especially during crop season, inaccessibility of extension functionaries or lack of interest among farmers to know about innovations. This finding is confirmative with the findings of Bhosle *et al*. (2000) [5]. Participation of the respondents in extension activities showed that below fifty of the respondents had low level of extension participation and rest had medium level of participation. The reason could be the respondents were not aware of the extension activities organized and even if aware, they were not been able to participate because of their preoccupation in farming activities. The results were in line with findings of Oladele (2013) [14] and Kashappa (2013) [9].

Less than half (45.56 %) of the respondents had low economic motivation, 41.11 per cent of respondents had high economic motivation and only 13.33 per cent of respondents had medium level of economic motivation. Reasons could be small size of land holdings, investment inadequacy, poor techniques of production followed by them, lack of irrigation facilities, inadequate non-farm services etc. The results are in accordance with the findings of Chauhan and Patel (2003) [7].

Less than half of (44.44 %) the respondents had medium level of innovativeness. The reason might be due to their old age (44.44 %) which might have restricted them to aspire and try out new things. Majority of the respondents belonged to small farm category with holdings of around 1 to 2 hectares and had low levels of education. All these factors might have contributed for their medium level of innovativeness. The results are in accordance with the findings of Bhagya laxmi *et al*. (2003).

More than half (53.33%) of the respondents had medium level of social participation followed by 27.78 per cent of respondents had low level of social participation and only 18.89 per cent of respondents had high social participation. The average social participation score was 3±0.17. The reason might beprevalence of several social functions in rural areas both at household level (e.g marriages) and at village level (e.g yearly celebrations in temples). The findings are in conformity with findings of Babanna (2002) and Thippeswamy (2007). Achievement motivation of 42.22 per cent of respondents' was low, while 37.78 per cent and 20.00 per cent of the respondents had high and medium levels of achievement motivation, respectively. The reason might be lack of interest in farming due to low productivity and less income. Changing weather in recent years also resulted in low crop yield or crop loss. Even if farmers obtain good yield, there would be low selling price which certainly affects their motivation. These findings are in conformity with the findings of Chatterjee (2000) [6] and Suresh (2004).

Equal percent of respondents belonged to medium (34.44%) and high (34.44%) followed by low (31.11%) levels of scientific orientation. The average scientific motivation score of the respondents was 21±0.21.This could be due to their level of education, and less use of mass media to educate themselves on new and emerging technologies. Besides, even rural environment and traditional mind set might have also restricted them to have less orientation to try new scientific technologies. The results are contradictory with the findings of Nithyashree and Angadi (2001) [13]. Nearly half (47.78%) of the respondents had medium level of risk orientation, while, 30.00 per cent of them had low level of risk orientation and 22.22 per cent had high levels of risk orientation. The average risk orientation score of the respondents was 19±0.18. Small land holdings, low income, less education level and old age could be the reasons for present finding. The results are in line with the findings of Meenagour and Bishnoi (2011).

Table 1: Socio-economic parameters of livestock farmers n=90

Sl. No	Independent variables	Frequency	Per cent
	Age (Years)		
1	Young(18-30)	24	26.67
2	Middle (31 to 50)	26	28.89
3	Old(51 and above)	40	44.44
Mean=42.18,- SE=1.09			
	Education		
1	Illiterate (Cannot read and write)	27	30.00
2	Primary education(1 to 4)	06	6.67
3	Middle school(5 to 7)	07	7.78
4	High school(8 to 10)	25	27.78
5	Higher secondary(11 to 12)	14	15.56
6	Graduation(Above 12)	11	12.22
Mean=6.87,- SE=0.47			
	Farming experience (years)		
1	Low (<17.84)	23	25.56
2	Medium (17.84-27.97)	21	23.33
3	High (>27.97)	46	51.11
Mean=22.91,-SD=11.91,- SE=1.08			
	Farming size (ha)		
1	Marginal farmers (Up to 1)	09	10.00
2	Small farmers (1 to 2)	38	42.22
3	Semi-medium farmers(2.1 to 4)	30	33.33
4	Medium farmers(4.1 to 10)	13	14.44
5	Big farmers (above 10)	00	0.00
Mean=6.53,- SE=0.36			
	Annual income (Rs.)		
1	Low (<77433.36)	45	50.00
2	Medium (77433.36 to 123100)	19	21.11
3	High (>123100)	26	28.89
Mean=100266.7,- SE=4904.43			
	Herd size (Adult Cattle Units)		
1	Low (<Up to 2)	24	26.67
2	Medium (2.1 to 3)	31	34.44
3	High (>Above 3)	35	38.89
Mean=3.27,-SE=0.14			
	Extension contact		
1	Low (<2.6)	29	32.22
2	Medium (2.676 to 4.21)	43	47.78
3	High (>4.21)	18	20.00
Mean=3,-SD=2,- SE=0.16			
	Extension participation		
1	Low (<2.16)	43	47.78
2	Medium (2.16 to 3.32)	27	30.00
3	High (>3.32)	20	22.22
Mean=3,-SD=1,- SE=0.12			
	Economic motivation		
1	Low (<21.09)	41	45.56
2	Medium (21.09 to 22.63)	12	13.33
3	High (>22.63)	37	41.11
Mean=21.86,-SD=1.80,-SE=0.16			
	Innovativeness		
1	Low (<24.61)	25	27.78
2	Medium (24.61 to 27.25)	40	44.44
3	High (>27.25)	25	27.78
Mean=25.93,-SD=3.11,- SE=0.28			
	Social participation		
1	Low (<2.54)	25	27.78
2	Medium (2.54 to 4.16)	48	53.33
3	High (>4.16)	17	18.89
Mean=3,-SD=2,- SE=0.17			
	Achievement motivation		
1	Low (<21.09)	38	42.22
2	Medium (22.09 to 24.57)	18	20.00
3	High (>24.57)	34	37.78
Mean=23.57,- SD=2.35,- SE=0.21			
	Scientific orientation		
1	Low (<20.04)	28	31.11
2	Medium (20.04 to 22.08)	31	34.44
3	High (>22.08)	31	34.44
Mean=21.0,- SD=2.40,- SE=0.21			
	Risk orientation		
1	Low (<18.53)	27	30.00
2	Medium (18.53 to 20.23)	43	47.78
3	High (>20.23)	20	22.22
Mean=19.38,- SD=1.99,- SE=0.18			

Symbolic Adoption on fodder production technologyby farmers through e-training tools

It was clear from the results presented in table 2 that, whatsapp video (T3) was highly effective (65.18 %) with respect to symbolic adoption towards 'Year round green fodder production' followed by video screening (T1) (58.51 %) and power point presentation (T2) (42.22 %). The calculated 'F' value (39.79) was found to be significant indicating (table 3), all the selected e-training tools were significantly different from each other in influencing the respondents towards mental adoption of selected topic. Whatsapp video is stored in mobile device of respondents which helps them to refer back at any time to adopt innovation. This might be the reason for T-3 emerging as effective treatment for symbolic adoption as compared to other two. Video screening (T1) was the next best e-training tools in influencing the symbolic adoption of the respondents. Reason could be that in videos actual actions of doing practice are involved which otherwise lacks in powerpoint presentation. So demonstration on how to do activities through video might be the strong reason for higher symbolic adoption in those treatments where video was involved.

Even though all the tools were effective in influencing respondent's adoption behaviour with variation in their effectiveness, none of the tools succeeded in influencing the behaviour of respondents by cent per cent from a particular tool. Symbolic adoption is a phenomenon influenced by factors other than the nature of communication methods used. Adoption is an important mental decision which makes people to seek reinforcement or reassurance from trusted associates in order to avoid a feeling of dissonance, which is especially needed when all the alternatives felt were important. Similarly, for activities that involve certain amount of expense and time, people tend to rely most on interpersonal channel of communication from whom they get reassurance as to the worthiness of a practice they are engaged in.

Table 2 Extent of symbolic adoption of year round green fodder production technology by respondents due to exposure to e-training tools n=90

Sl. No	Treatment	Mean symbolic adoption score	Symbolic adoption in %
1	Video screening (n=30)	5.26	58.51
2	Power point presentation(n=30)	3.80	42.22
3	Whatsapp video (n=30)	5.86	65.18

(%-Percentage)

Table 3: Analysis of variance for the symbolic adoption of the respondents as influenced by e-training tools

Source of variation	SS	df	MSOS	F	F critical value
Between treatment	67.822	2	33.911	39.79**	3.101
Within treatment	74.133	87	0.852		
Total	141.955	89			

** 0.1% level of significance

Relationship of socio-economic characteristics with symbolic adoption after exposure to e-training tools

There was a negative and significant relationship between annual income and symbolic adoption of year round green fodder production technology by the respondents of video screening group (T1) and whatsapp video group (T3). Farmers with lesser annual income might have thought to use their money for adopting new technologies in cultivation of food and commercial crops. Education was negatively and

significantly related with symbolic adoption of year round green fodder production technology by farmers who belonged to whatsapp group. More educated farmers use whatsapp and owing to better education they might be inclined towards adopting more sophisticated farm technologies than the technologies of less economically important crops like forages. In case of power point presentation (T2), farm size and annual income exhibited positive and significant relationship with symbolic adoption. Sparing land for fodder production is possible if farm size is big and hence big land holders might have inclined mentally to adopt this technology. Higher the annual income more will be the ability to spend on expensive seeds and planting materials of fodder crops, which could be the reason for positive and significant relationship between annual income and symbolic adoption due to exposure to powerpoint presentation. Human intervention in power point presentation (T2) to convince about importance of these crops for sustainable mixed farming could have positively influenced which was not so with T3. Findings are in line with the findings of Dechamma (2015) [8].

Table 4: Relationship of socio-economic characteristics with symbolic adoption after exposure to e-training tools

Variables	T1	T2	T3
Age	-0.008	-0.085	0.251
Education	-0.135	0.079	-0.364*
Farming experience	-0.26	0.021	0.33
Farming size	-0.068	0.543**	-0.241
Annual income	-0.411*	0.418*	-0.372*
Herd size	0.221	-0.293	0.058
Extension contact	-0.055	0.35	0.186
Extension participation	-0.086	-0.033	-0.012
Economic motivation	-0.264	-0.024	0.258
Innovativeness	-0.054	0.112	-0.235
Social participation	-0.167	0.149	0.21
Achievement motivation	-0.092	-0.047	-0.048
Scientific orientation	0.244	0.021	0.083
Risk orientation	-0.007	-0.056	-0.142

*Significant at 0.05 level of probability
**Significant at 0.01 level of probability

Conclusion

The study can be concluded that the whatsapp video (T3) was highly effective with respect to symbolic adoption towards 'Year round green fodder production'. It also reported that farm size and annual income exhibited positive and significant relationship with symbolic adoption. This indicates that educational videos can be developed on different fodder technologies and preferentially shared among big farmers for speedier symbolic adoption. This may eventually lead to use adoption' of fodder technologies thus enabling farmers to arrive at fodder self-sufficiency for their livestock.

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