

Impact of e-Velanmai (e-Agriculture): An ICT Enabled Extension Approach

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ABSTRACT

An impact assessment of the beneficiaries of 'e-Velanmai' was undertaken in Palar sub-basin district of Tamil Nadu. Palar sub-basin consists of 3 Water user Associations (WUA). About 20 respondents were drawn randomly from each WUA making the total sample size to 60 beneficiaries of 'e-Velanmai' project. Partial budgeting technique was used to assess the impact of e-Velanmai. The study compared conventional approach of extension with e-Velanmai approach on various dimensions. The study also explored and presented the strengths, weaknesses, opportunities and challenges (SWOC) of the ICT enabled extension model. Findings from the research showed that e-Velanmai has positively impacted farmers and improved their income. The comparative analysis shows that e-Velanmai is comparatively effective method of extension approach in various aspects.

Keywords: e-Velanmai, conventional extension, ICT based extension and SWOC analysis.

INTRODUCTION

e-Velanmai is an ICT based, demand driven, participatory and sustainable technology transfer model in agriculture to provide timely agro-advisory services by a multidisciplinary team of agricultural scientists to the farmers using ICT tools (digital camera, computer, internet, mobile phone etc.) through a field coordinator (FC) on need basis (Karthikeyan, 2011a; Karthikeyan *et al.*, 2012). It is referred as demand driven and participatory technology transfer model because farmers pay membership fees based on their farm size to avail the extension services under e-Velanmai as an indicator of their participation in the system of technology transfer (Karthikeyan, 2012a; Shanthinichandra, 2012). Scientists attend the farmers queries based on their call (demand) or need and hence, it is demand driven for technical advice or scientific farming. It is also believed to be sustainable approach of extension as it facilitated the farmers to adopt the 'e-Velanmai' model for technology access in the long run even after the project period. The membership fees collected was utilized for managing the sustainability of the process. The 'e-Velanmai' model of extension was evolved from a pilot tested public model, initiated during July 2007 into a paid model or private model, during October 2008. In order to enhance the participation of farmers in scientific farming and to have sustainability of the scheme, paid model of e-Velanmai was conceived and introduced in three sub basins namely, Palar, Aliyar and Varahanadhi through Water User Association functioning in these command areas (Karthikeyan, 2011b; Karthikeyan, 2012b). The performance of the extension model was field tested for its feasibility and results in

terms of the participation of farmers in the project, rate of adoption of the extension advices and benefits perceived by the farmers. Based on the successful results obtained, World Bank has supported for up scaling the 'e-Agriculture' model of extension in 19 irrigation project command areas of the state during 2011-12 and in 26 sub basins during 2012-13. About 10,507 farmers joined as members and availed the advisory services through e-Velanmai scheme. At least one individual from each farmer's family was trained to handle ICT tools. About 20,211 expert advices were offered to the farmers to solve both problem and decision based queries. All the advices were delivered to the farmers on the same day. The extension model drastically reduced the time lag in dissemination from research system to client system. The turnaround time to disseminate the technologies was 1-3 hours on the same day. Now, this project is adopted by State Department of Agriculture in 500 villages of Tamil Nadu during 2013-14 through the extension officials (BTM/SMS) (Karthikeyan, 2013). So, it is essential and also inevitable to study the impact of the e-Velanmai scheme on the farming community. With this background, the study was undertaken with the following objectives;

- To study the impact of e-Velanmai
- To compare conventional approach of extension with e-Velanmai approach and
- To perform SWOC analysis of e-Velanmai model of extension.

METHODOLOGY

The pilot experiment was done during July 2007 and March 2011 in three sub-basins *viz.*, (i) Varaghanadhi

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(dominated by resource poor farmers and seasonal cropped area) of Villupuram district (ii) Palar and Aliyar (dominated by resource rich farmers and plantation cropped area) of Tirupur and Coimbatore districts of Tamil Nadu state respectively with the support of the World bank aided TN-IAMWARM project of the Government of Tamil Nadu. Based on the successful results obtained, the project was upscaled in 19 irrigation project command areas of the state covering 14 districts of Tamil Nadu during April 2011- March 2012. Palar sub-basin was purposively selected due to the reason that e-Velanmai was initially pilot tested in Palar sub-basin since 2007. In Palar sub basin, the e-Velanmai project was implemented in three Water User Associations (WUA's) covering 45 villages spread over Sultanpet block of Coimbatore district. In Sultanpet block, there are three WUA's namely Kumarapalayam, Senjeriputhur, and J.Krishnapuram. All the three WUA's were selected for the study. Two villages were randomly drawn from each of the selected WUA's. In each of the selected villages, 10 farmers were randomly selected. In this manner, a total of 60 farmers were selected for the present study. The economic impact of e-Velanmai is measured using Partial Budgeting Technique by considering the before and after situations of the sample. The conventional approach of extension was compared with e-Velanmai approach using 3 point continuum scale: low, medium and high with score of 1, 2, and 3, respectively. Strengths, Weakness, Opportunities and Challenges (SWOC) of ICT based model were also studied.

RESULTS AND DISCUSSION

Impact of e-Velanmai

The economic impact of e-Velanmai approach of extension was measured using partial budgeting technique. The economic change that occurred as a result of adoption of 'coconut topic' to prevent button shedding in coconut tree was estimated

Table 1: Economic impact of e-Velanmai model of extension
n=60

Items	Items
Added cost/ac (avg.) = ₹ 5755/-	Added returns/ac(avg.) = ₹ 12, 260 /-
Reduced returns (avg.) = Nil	Reduced costs(avg.) = Nil
Total of added costs and reduced returns = ₹ 5755/-	Total of added returns and reduced costs = ₹ 12, 260/-
Net change = ₹ 12, 260-5755 = ₹ 6505 /acre	

It is evident from the table 1 that farmers incurred on an average of ₹ 5755 as additional cost per acre. It includes technology cost, labour cost and membership

cost. In return by adopting the recommended technology, the farmers gained on an average ₹ 12,260 per acre. By subtracting the added cost from added returns, it was computed that farmers gained around ₹ 6,500 as net income. Thus, e-Velanmai had contributed significantly towards upliftment of farmers and in other words e-Velanmai had positively impacted farmers in economic terms.

Comparing e-Velanmai approach with conventional approach of extension

The e-Velanmai approach of extension was compared with the predominantly existing conventional approach using ten parameters including the usefulness of extension services and frequency of questions raised. The findings are presented in Table 2. In terms of usefulness, 83.33 per cent beneficiaries (e-Velanmai) found that advices rendered by e-Velanmai were useful while only 11.67 per cent farmers found that conventional approach as useful. The technologies/advices were provided on the basis of demand and need. The services provided by e-Velanmai was problem specific and personalized to particular farm. So, the usefulness of the services were perceived to be high. The quality in which the services were provided by e-Velanmai was observed to be high among 90.00 per cent of the farmers whereas around three-fourth (73.33 %) of the respondents expressed disappointment with conventional approach. Almost all farmers (93.33 %) had high credibility over e-Velanmai while majority (70.00%) had low credibility over conventional source of farm information. In case of accessibility of service, 91.67 per cent of farmers found that it is very easily accessible as e-Velanmai is ICT based extension approach, it has very high accessibility compared with conventional approach.

Table 2: Comparative analysis between Conventional and e-Velanmai approach of Extension

Parameters	Conventional approach			e-Velanmai approach		
	High	Moderate	Low	High	Moderate	Low
Usefulness	11.67	51.67	36.66	83.33	16.67	-
Quality of service	13.33	13.33	73.34	90.00	10.00	-
Credibility of advice	8.33	21.66	70.00	93.33	3.33	3.33
Accessibility of Technical advice	15.00	13.33	71.67	91.67	5.00	3.33
Efforts needed to seek advice	80.00	20.00	-	-	11.67	88.33
Turnaround time/Timeliness	-	23.33	76.66	81.67	18.33	-
Appropriateness	13.33	18.33	68.33	86.67	13.33	-
Accountability	-	25.00	75.00	91.67	8.33	-
Clarity of service	5.00	15.00	80.00	93.33	6.66	-
Frequency of questions raised	8.33	28.33	63.33	91.67	8.33	-

e-Velanmai provided farm information at farmers' doorsteps itself. So, there is minimal effort or no effort needed to access extension advices. It can be understood from the fact that 88.33 per cent farmers said that efforts needed to obtain information through the ICT based model was low. Farmers need to go to ADA office/Relatives/input dealers to obtain farm information. So, they need effort whenever they want to obtain extension services. That is why all farmers said that they took more efforts to access extension services. Turnaround time/timeliness of the extension services plays a pivotal role in solving various management problems in Agriculture. When the information is not obtained in timely manner, the information is of no use. Being an ICT enabled approach, e-Velanmai delivered services ranging between 1 and 3 hours. More than four-fifth of the farmers felt that services were provided timely. No one was found to satisfy with information provided with time lag which is a major drawback of conventional approach.

More than 90.00 per cent of the farmers felt that services provided were accountable as Filed coordinators note down the advices provided to farmers in the membership card given to beneficiaries every time they gave information to farmers. On the other hand, there is no accountability with conventional approach as no record is maintained on the information provided. The advices provided through e-Velanmai was considered to be clear (93.33%) than conventional approach. Majority of the farmers (80.00%) felt that there was no clarity in advice/service with conventional approach. As e-Velanmai model handled both individual approach as well as ICT tools to solve farm problems, it encouraged farmers to ask more questions to field coordinators. An overwhelming per cent of the farmers (91.67%) felt that frequency of asking queries seeking solutions to tackle farm issues increased after enrolling in e-Velanmai scheme as a beneficiary. Thus, e-Velanmai is comparatively best mode of technology transfer compared to conventional approach that is being adopted by the State Department of Agriculture in Tamil Nadu.

SWOC analysis

The SWOC is a tool that facilitates examination of the internal and external factors affecting programs and projects (Burgos *et al.*, 2011). The SWOC is represented in a double-entry matrix in which positive and negative factors are analyzed on the horizontal level and the internal factors (considered to be controllable by the project) and the external (uncontrollable) factors are analyzed with the vertical reading.

In this study, the SWOC matrix enabled an analysis of

some of the key factors that could contribute to the successful development of e-Velanmai, highlighting the strengths and the internal weaknesses by comparing them objectively and realistically with the alternatives and with the key opportunities and threats in the environment. The findings are presented in Table 3.

Table 3. SWOC analysis of e-Velanmai

STRENGTHS	WEAKNESSES
Participatory model	Connectivity problems
Combination of personal and ICT based approaches	Farmer :: Extension staff ratio
Easy access to extension service at farmer's doorstep	Possession of ICT tools by farmers
Instant/timely remedy to farm problems	
Information from credible source	
Farmer friendly approach	
OPPORTUNITIES	CHALLENGES
Upscalable, replicable and sustainable Extension approach	Sustainability of the project after withdrawal of World bank funding
Possible collaboration between State Agricultural University and State Agricultural Department under Public-Public Partnership mode	Government policy support for use of ICT tools for Extension
Possible collaboration between State Agricultural Department and IT companies under Public-Private Partnership mode with Corporate Social Responsibility(CSR) banner	
Market price and weather related information besides technical can also be disseminated.	
Real time TOT possible through Skype/conference calls	

CONCLUSION

The study proved that the e-Velanmai- the ICT based Extension had impacted farmers positively in terms of production, productivity, yield and ultimately income. After enrolling in e-Velanmai as beneficiaries, farmers gained additional income due to adoption of advices received in time. The results also revealed that e-Velanmai is advantageous when compared to conventional approach in various aspects and farmers also possessed positive attitude towards ICT based extension approach. It is evident from the study that, if the extension advices are made in time and appropriate then farmers will come forward to pay and receive the advice. The SWOC analysis reveals that the strengths must be used, the advantage of opportunities must be taken, the weaknesses must be eliminated, and the threats must be dealt with. This model is recommended for adoption by the State Department of Agriculture in India and it can be

replicated in other developing countries where similar situation prevails

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