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Process Impact of e-Velanmai Model of Extension among Beneficiaries in Tamil Nadu

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ABSTRACT

A study was undertaken to study the process impact of e-Velanmai model of extension, implemented by Tamil Nadu Agricultural University, in three districts viz., Coimbatore, Tirupur and Villupuram of Tamil Nadu, with 90 beneficiary respondents. It was found that more than half (51.10 %) of the beneficiary respondents had reported high level of turnaround time; an overwhelming percentage (92.20 %) of the beneficiary respondents had expressed high level of effectiveness of advice; nearly half (48.90 %) of the beneficiary respondents had expressed 75 per cent level of effectiveness of scientists involvement; almost all (98.90 %) of the beneficiary respondents had expressed high level of effectiveness of ICT tools used; all (100.00 %) the beneficiary respondents had expressed high level of effectiveness of Field Coordinator; and Service Quality analysis revealed that the beneficiary respondents were satisfied with the functioning of e-Velanmai model of extension, since it had fulfilled their expectations.

The Tamil Nadu Agricultural University (TNAU) implemented the e-Velanmai (Electronic Agriculture) project from July 2007 to March 2013, under the TN-IAMWARM (Tamil Nadu Irrigated Agriculture Modernization and Water-Bodies Restoration and Management) project, funded by the World Bank. According to Karthikeyan (2011), the Principal Investigator of the project, e-Velanmai was a combination of interpersonal and ICT (Information and Communication Technology) based, demand-driven and participatory extension model aimed at providing timely agro advisory services to the registered farmers. The TNAU Scientists served as experts and provided advise for the decision-based queries and problem-based queries raised by farmers by means of modern ICT tools viz., Laptop computer, Digital Camera, Internet and Mobile Phone, which was coordinated by the Field Coordinator.

As e-Velanmai was a paid model of extension service and a new venture, it was expected that it would evoke different kinds of responses among the beneficiaries. Totally, 10,507 farmers, of which 1,076 were farm women, were enrolled as members in the project by paying a nominal fee of Rs. 50/- per farmer with upto five acres of land, Rs. 100/- for those with 5.1 to 10 acres, and Rs. 150/- for those with land holding of above 10 acres. During the project period, based on demand advices were given to the members to solve their farm problems and to take

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informed decisions. In the light of the above it was decided to assess the process impact of e-Velanmai project among the beneficiaries.

The objectives of the study were as follows:

- To assess the process impact of e-Velanmai model of extension among the beneficiaries.
- To elicit suggestions from the beneficiaries for further improving the e-Velanmai model of extension.

METHODOLOGY

The e-Velanmai project was implemented in three districts of Tamil Nadu *viz.*, Coimbatore (Aliyar sub-basin), Tirupur (Palar sub-basin) and Villupuram (Varahanadhi sub-basin), and therefore the study was carried out in all these three districts. The respondents of the study were registered farmers (beneficiaries) of e-Velanmai. Based on probability proportionate sampling method, 30 beneficiary respondents were selected from two Water User Associations (WUAs) in Aliyar sub-basin; 30 respondents from three WUAs in Palar sub-basin; and 30 respondents from three WUAs in Varahanadhi sun-basin, and thus the total sample size of the beneficiaries was 90.

The impact of e-Velanmai project was assessed in terms of 'Process Impact', which referred to the consequences that occurred among the e-Velanmai beneficiaries due to the unique methodology that was followed by the e-Velanmai model of extension such as Use of ICT Tools, Facilitated by Field Coordinator, and Involvement of TNAU Scientists. The Impact of Process was assessed by means of six parameters *viz.*, Turnaround Time, Effectiveness of Advice, Effectiveness of Scientists Involvement, Effectiveness of ICT Tools, Effectiveness of Field Coordinator, and Service Quality.

'Turnaround Time' referred to the time taken from the reporting of a problem (decision-based queries or problem-based queries) by a beneficiary until the advice was offered by the TNAU Scientist, facilitated by the Field Coordinator. The turnaround time was measured in hours and minutes, which were entered in the membership card. 'Effectiveness of Advice' referred to the perceived effectiveness of the messages that were delivered, whether they were related to decision-based queries or problem-based queries, to the beneficiaries of e-Velanmai model of extension. Effectiveness of Advice was assessed by means of three indicators viz., Precision, Completeness and Simplicity. 'Effectiveness of Scientists Involvement' was operationalized as the measure of assistance extended by TNAU Scientists to the beneficiaries of e-Velanmai model of extension, in terms of advisories rendered for decision-based queries or problem-based queries as well as technical guidance offered during the seminars organized periodically. The perceived effectiveness of Scientists Involvement was assessed in terms of percentage. 'Effectiveness of ICT tools' was operationalized as the degree of usefulness of ICT tools that were employed by the e-Velanmai model of extension, as perceived

by the beneficiaries. This was assessed by means of three indicators *viz.*, Simplicity, Efficiency and Quickness. 'Effectiveness of Field Coordinator' was operationalized as the extent to which the Field Coordinators were perceived to be useful to the beneficiaries in terms of providing various services under e-Velanmai model of extension. 'Effectiveness of Field Coordinator' was assessed by means of four indicators *viz.*, Easiness, Promptness, Efficiency and Credibility.

'Service Quality' referred to the perceived excellence of the facilities / assistance / benefits that were provided to the beneficiaries of e-Velanmai model of extension. Service Quality was measured by means of the RATER model of gap analysis developed by Zeithaml et al., (1990). The gap analysis aimed to study the difference between: Standards and the delivery of those standards, or Beneficiary perception and expectation.

The RATER model is explained as:

- Reliability refers to the ability to perform the service accurately and dependably.
- Assurance relates to knowledge and accuracy of employees and their ability to convey trust and confidence to the customers.
- Tangibles refer to the appearance of physical facilities, equipment, personnel and communication materials.
- Empathy refers to dealing with customers in a caring and individualized manner.
- Responsiveness is the willingness to help customers and provide prompt service.

Based on the above five attributes a schedule was developed with 15 statements, at the rate of three statements per indicator. Each statement was assessed in terms of its 'service satisfaction' and 'service expectation' by assigning scores of 1 to 5 for each. The interpretation of the scores is given as under.

Scores	Service Satisfaction	Service Expectation
1.	Highly dissatisfied	Highly unexpected
2.	Dissatisfaction	Somewhat unexpected
3.	Neutral	Neutral
4.	Satisfied	Somewhat expected
5.	Highly satisfied	As expected

The mean score obtained by the respondents on each of the attribute was calculated. The gap was identified between satisfaction and expectation levels. Paired 't' test was carried out to test the significance of difference between the satisfaction and expectation mean values.

FINDINGS AND DISCUSSION

The results and discussion are presented as follows:

1. Turnaround Time

The distribution of beneficiary respondents according to turnaround time is given in Table 1. The study reveal that more than half (51.10 %) of the beneficiary respondents had reported high level of turnaround time, followed by medium level (36.70 %), and the rest 12.20 per cent of the respondents reported low level of turnaround time. It is observed that the internal variation (50.50 %) was higher for beneficiary respondents with respect of turnaround time.

Table 1.
Distribution of Respondents according to Turnaround time, Effectiveness of Advice, Scientist Involvement & ICT tools

Sl.No.	Parameters	Low No.	%	Medium No.	%	High No.	%
1.	Turnaround time	11	12.20	33	36.70	46	51.10
2.	Effectiveness of advice	0	-	7	7.80	83	92.20
3.	Effectiveness of ICT tools	0	-	1	1.10	89	98.90

The turnaround time referred to the time taken from the reporting of a problem by a beneficiary respondent until the advice was offered by TNAU Scientists, facilitated by the Field Coordinator. Majority of the beneficiary respondents had expressed high level of turnaround time, which means that the respondents received the advice within a short period of time, without any delay. This implies that the Scientists and Field Coordinators were quite prompt in attending to the farmers queries.

2. Effectiveness of Advice

It is also observed that an overwhelming percentage (92.20 %) of the beneficiary respondents had expressed high level of effectiveness of advice, and the rest (7.80 %) medium level of effectiveness of advice. It is observed that the internal variation (12.00 %) was lower for the beneficiary respondents with respect to effectiveness of advice.

Effectiveness of advice depended upon three indicators *viz.*, Precision, Completeness and Simplicity of the advice. More than ninety per cent of the beneficiary respondents had expressed high level of effectiveness of advice. This implies that the Scientists had exercised adequate caution while formulating the messages, as well as during giving replies to queries raised by the farmers, to ensure that they are precise, complete and simple.

3. Effectiveness of Scientists Involvement

The study reveal that nearly half (48.90 %) of the beneficiary respondents had expressed 75 per cent level of effectiveness of scientists involvement, followed by more than one-third (36.70 %) who had reported 50 per cent

effectiveness, 10.00 per cent had expressed 100 per cent effectiveness, and the rest (4.40 %) had expressed 25 per cent effectiveness of scientists involvement. The internal variation (27.69 %) was found to be low among the beneficiaries, indicating greater consistency among the beneficiary respondents with respect to effectiveness of scientists involvement.

Since, the scientists have attended to the queries of the beneficiary respondents promptly, as evident with the results of turnaround time, more than half of the respondents had reported 75 per cent and above level of effectiveness of scientists involvement. However, it is seen that around 40 per cent of the respondents had indicated less than 50 per cent of effectiveness of scientists involvement. The reason being, the respondents felt that interpersonal communication with scientists is always better than any other means of communication, which was available to a limited degree only during the technical seminars and field diagnostic visits.

4. Effectiveness of ICT Tools

Almost all (98.90 %) of the beneficiary respondents had expressed high level of effectiveness of ICT tools used during e-Velanmai project period, and the rest (1.10 %) medium level of effectiveness of ICT tools. The Coefficient of Variation was found to be 11.00 per cent, inferring that the internal variation was less among the beneficiary respondents with respect to effectiveness of ICT tools.

Effectiveness of ICT tools depended upon three indicators *viz.*, Simplicity, Efficiency and Quickness. Majority of the respondents had reported high level of effectiveness, which means that the ICT tools were found to be simple, efficient and quick to use. This implies that the ICT tools had played an effective role in serving as a channel between the farmers and the scientists to convey the information.

5. Effectiveness of Field Coordinator

All (100.00 %) the beneficiary respondents had expressed high level of effectiveness of Field Coordinator. The Coefficient of Variation was found to be 9.48 per cent, inferring that the internal variation was less among the beneficiary respondents with respect to effectiveness of Field Coordinator.

All the beneficiary respondents had expressed higher level of effectiveness of Field Coordinator. This means that the Field Coordinators were found to be satisfactory to the respondents in terms of their easiness, promptness, efficiency and credibility. This implies that the Field Coordinators were sincere in their duties, and committed to the project work, whereby this result would have occurred.

6. Service Quality

The distribution of beneficiary respondents according to service quality is given in Table 2.

From Table 2 it is observed that the 't' value was non-significant indicating that there exists no significant gap between the

Table 2.
Distribution of Beneficiary Respondents According to Service Quality

Sl.No.	Statements	Satisfaction	Expectation	Gap
I	**Reliability**			
1.	The Field Coordinator was dependable in providing extension advices.	3.33	2.45	0.88
2.	Services were provided at the right time.	4.15	3.34	0.81
3.	Advices provided were appropriate to my problem / situation.	3.96	3.17	0.79
II	**Assurance**			
4.	Field Coordinator was knowledgeable enough to solve my field problems.	3.48	2.70	0.78
5.	Advices offered were quite precise to the situation.	4.18	3.44	0.74
6.	Field Coordinators were trustworthy in delivery of extension services.	3.93	2.94	0.99
III	**Tangibles**			
7.	The Field Coordinator made personal visits to the farm to offer services.	3.75	3.02	0.73
8.	Advices offered by Field Coordinator were clear, understandable and complete.	4.05	3.17	0.88
9.	The solutions offered by the Field Coordinator were cost effective.	4.15	3.25	0.90
IV	**Empathy**			
10.	Custom tailored advices were offered.	3.44	2.82	0.62
11.	Field Coordinator was quite concerned to solve my problems.	3.95	3.31	0.64
12.	Convincing approach was adopted by the Field Coordinator.	3.90	2.96	0.94
V	**Responsiveness**			
13.	The Field Coordinator was prompt in attending to my calls.	3.21	2.54	0.67
14.	There was hardly any delay while offering solutions.	4.11	3.43	0.68
15.	Field Coordinator was quite willing to extend his services any time.	4.07	3.12	0.95
			't' Value	25.96^{NS}

NS: Non-significant

satisfaction scores and expectation scores of the beneficiary respondents with respect to Service Quality.

The results imply that the beneficiary respondents were satisfied with the quality of the services offered under e-Velanmai model of extension. This means that the Field Coordinators and TNAU scientists were able to match the requirements of the beneficiary respondents, which was supported by effective use of the ICT tools.

Suggestions for Improving the Services under e-Velanmai

The suggestions offered by the beneficiary respondents for improving the e-Velanmai model of extension is given in Table 3.

Table 3.
Suggestions for Improving the Services under e-Velanmai

Sl.No.	Suggestions	Beneficiaries	
		Number (n-90)	Per cent*
1.	Number of Field Coordinators may be increased	78	86.60
2.	Day-to-day Market Information may be provided	65	72.20
3.	Post Harvest Technology/ Value Addition information for coconut and other crops may be provided	45	50.00
4.	A separate office for e-Velanmai project may be opened in every sub-basin	43	47.70
5.	Schemes with Subsidy details may be provided	19	21.10
6.	Farm Machinery details for various crops may be provided	18	20.00
7.	TNAU Scientists need to visit farmers fields once a month, as part of the e-Velanmai project	7	7.70

* Multiple Responses

It is observed from Table 3 that the foremost suggestion offered by the beneficiary respondents for improvement of the e-Velanmai model of extension was "Number of Field Coordinators may be increased" (86.60 %), followed by "Day-to-day market information may be provided" (72.20 %), "Post Harvest Technology / Value Addition information for coconut and other crops may be provided" (50.00 %), "A separate office for e-Velanmai project may be opened in every sub-basin" (47.70 %), "Schemes with Subsidy details may be provided" (21.10 %), "Farm Machinery details for various crops may be provided" (20.00 %) and "TNAU Scientists need to visit farmers fields once a month as part of the e-Velanmai project (7.70%)".

The first and foremost suggestion offered by the beneficiary respondents was "number of Field Coordinators may be increased". When the e-Velanmai project was operated by TNAU, one Field Coordinator was made in-charge for an entire sub-basin. The Field Coordinator was in the cadre of SRF (Senior Research

Fellow) drawing Rs. 16,000 /- per month, with a six-day work schedule. The daily schedule would start by 9.00 AM and end by 5.00 PM. Vehicles for mobility were not provided to the Field Coordinators. Each sub-basin covered a vast area; for instance Palar sub-basin covered an area of 1,53,965 hectares. Therefore, if additionally one more Field Coordinator is posted to look after a sub-basin, the work turnover will be more and any delay in meeting the registered members can be avoided.

CONCLUSION

e-Velanmai being a novel approach, which was attempted for the first time in Tamil Nadu, required an equally appropriate methodology for implementing it successfully. The study has revealed that the e-Velanmai process has achieved its purpose as the beneficiary respondents have rated all the six impact parameters favourably. It is therefore suggested that this process may be followed wherever ICT projects similar to e-Velanmai model are implemented.

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