



## Effective Utilization of Tech-Enabled Platforms (TEP) By the Extension Personnel in Agriculture

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### ABSTRACT

The present research was conducted in randomly selected districts of Telangana i.e Mahabubnagar, Waranagal and Nizamabad and 20 Agricultural Officers and 20 Agricultural Extension Officers from each erstwhile district are selected. Thus, a total of 120 Extension Personnel were selected randomly. Ex post-facto research design was used and data was collected through interview schedule. The Technology enabled platforms used were Applications like Pantala yajamanyam, Rythu bandhu, Kisan Suvidha and portals like OLMS (Online License Management System), OSSDS (Online subsidy seed distribution system), Farm inventory, Agrisnet, PM kisan yojana, PMKSY, PKVY, m-kisan and Soil health card portal, m-kisan and Kisan Suvidha were not at all used by the AEOs. TEPs were used mainly for the purpose of supply of inputs and for transfer of technology but they were not utilised for knowledge or skill or information, sending reports and for organisational communication. The study showed that TEPs were used regularly in the areas of crop production and farm mechanisation while there were no Apps and portals for marketing, value chain management, post-harvest technology, land preparation and pest and disease diagnosis. Finally, the overall extent of utilisation was medium for both AOs and AEOs. Majority 53.33 per cent of Agricultural Officers belong to medium level of overall extent of utilisation followed by low (30%) and high (16.67%) while more than half 48.33 per cent of Agricultural Extension Officers belong to medium level of extent of utilisation followed by low (41.67%) and high (10%).

**Key words:** Utilisation; Technology enabled platforms; Extension platforms.

Indian agriculture involves millions of small and marginal farmers, and many of those small and marginal farmers are illiterate and have little or no access to resources to access modern technology in agriculture (Yadav et al., 2015). The primary task of agricultural extension service is to exchange and share agricultural information. Information and communication technology (ICT) has emerged as a tool for achieving meaningful societal transformation (Meera et al., 2004). Information is regarded as one of the most valuable resource in agricultural and rural development

programmes (Morrow et al., 2002). It is also regarded as an important input in agriculture (Oguya, 2007).

In the era of globalization, information and communication technology (ICTs) is the most powerful resource for the widespread transfer and sharing of information (Lewis, 2009). ICTs can be used to enable, strengthen or replace existing information systems and networks. Its utilization in agriculture can promote and distribute new and existing farming information for bringing social and economic changes. ICTs can give a new impetus to the social organizations and productive

activity of agriculture, which could become a major factor in the transformation stages of Bangladesh agriculture (Swanson BE, 2010). In recent times, there has been revolution with regards to ICT in agriculture particularly in extension service delivery. ICT can help the villages from not being isolated and connect them in various information and marketing sources. The extension service profession demands certain characteristics for the effective transfer of technology. Now as the world is becoming digitalised, the extension personnel have to acquire more ICT based skills. (Rose Mathews and NB Jadav, 2020).

Information and communication technology, according to Unagha (2006) is an omnibus term that encompasses computer and telecommunications technology. ICTs can be broadly interpreted as technologies that facilitate communication and the processing and transition of information by electronic means. Wirsiy and Shafack (2002) see it as a broad-based term that encompasses the gathering (acquisition), organization (packaging), storage and retrieval (dissemination) of information that can be in textual or numeric (books and documents), pictorial and vocal forms (audio-visual), using combination of all the above (multimedia) including computers and telecommunications (telephones). ICTs have the potentials of bridging the existing communication gap among the extension workers on one hand and between the extension workers and the farmers on the other (CTA, 2003).

## METHODOLOGY

The present study was conducted in the state of Telangana. Ex-post facto research design was adopted in the present investigation. Three (3) zones of Telangana state were selected for the study. One erstwhile district from each zone were selected randomly *i.e.* Mahabubnagar district from Southern Telangana Zone, Nizamabad district from Northern Telangana Zone and Warangal from Central Telangana Zone. Respondents were Agricultural Officers (AO) at mandal level and Agricultural Extension Officers (AEO) in village level. 20 Agricultural Officers and 20 Agricultural Extension Officers from each erstwhile districts were selected. Thus, a total of 120 Extension Personnel's were selected randomly. The Technology enabled platforms used were Applications like Pantala yajamanyam, Rythu bandhu,

Kisan Suvidha and portals like OLMS ( Online License Management System), OSSDS(Online subsidy seed distribution system), Farm inventory, Agrinet, PM kisan yojana, PMKSY, PKVY, m-kisan and Soil health card portal.

*Extent of utilisation* : The extent of utilisation of technology enabled platforms services is operationalized as the use of the various services by the extension personnel in receiving information. The extent of utilisation is studied under three sub headings. The combined score of the three components was computed for arriving final score.

1. Frequency of utilisation
2. Purpose of utilisation
3. Area of utilisation

Frequency of utilisation was operationalized as to how many times TEP was utilised. It was measured on a five point continuum viz., very frequently, frequently, less frequently and not at all with scores of 4, 3, 2 and 1 respectively. The purpose of utilization was operationalized as for what purpose the TEP was used. Six categories *i.e* Knowledge/skill/ recent information, transfer of technology, supply of inputs, sending /making reports, sharing with concerned organization including input agencies, organisational communication and others with scoring of 1 for each purpose. Area of utilisation was operationalized as the areas in which the technology enabled platforms are used. Six categories of areas of utilisation like crop production, crop protection, farm mechanisation, marketing, value chain management and others (specify) were used. These six categories of areas of utilisation with three-point continuum viz., always, sometimes and never with scores 3, 2 and 1 was considered.

Overall extent of utilisation was obtained by adding individual scores obtained from each sub item to get the total score of each respondent. The maximum and minimum possible scores were 384 and 108. For Agricultural officers, the maximum and minimum obtained scores were 172 and 127 respectively while for Agricultural extension officers the maximum and minimum scores obtained for respondents were 137 and 116 respectively. The respondents were classified into low, medium and high categories of information processing behaviour using exclusive class interval method.

Categories of extent of utilisation	Class interval for AOs	Class interval for AEOs
Low	127 - 142	116 - 123
Medium	142 - 157	123 - 130
High	157 - 172	130 - 137

**RESULTS AND DISCUSSION**

*Frequency of utilisation* : From the Table 1, it is clear that the Agricultural officers used certain Apps and portals very frequently in the order of Online License Management System portal (85%), Rythu Bandhu (80%) and PM Kisan (75%). Frequently used Apps and portals were Soil health card portal (85%), Farm mechanisation portal (81.67%), Online subsidy seed distribution system (78.33%), PM Kisan (25%), Pantala Yajamanyam (23.34%), Rythu Bandhu (20%), Online License Management System portal (15%), PMKSY (11.67%), PKVY (10%) and Agrisnet (5%). Less frequently used Apps and portals were Agrisnet (95%), PKVY (90%), PMKSY (88.33%), Pantala Yajamanyam (76.67%), Kisan Suvidha (25%), Pantala Yajamanyam (23.34%), online subsidy seed distribution system (21.67%), m-kisan (21.67%), Farm mechanisation portal (18.33%) and Soil health card portal (15%). The Apps and portals which fall under not at all used category were m-kisan (78.33%) and Kisan Suvidha (75%).

The Agricultural extension officers used certain

Apps and portals very frequently in the order of Rythu Bandhu (76.67%) and PM Kisan (70%). Frequently used Apps and portals were Soil health card portal (83.33%), PM Kisan (30%), Rythu Bandhu (23.33%), Pantala Yajamanyam (20%), PMKSY (20%) and PKVY (15%). Less frequently used Apps and portals were PKVY (85%), Agrisnet (83.33%), PMKSY (80%), Pantala Yajamanyam (80%), Soil health card portal (16.67%), Kisan Suvidha (10%), m-kisan (5%). The Apps and portals which fall under not at all used category were Online License Management System portal (100%), online subsidy seed distribution system (100%), Farm mechanisation portal (100%), m-kisan (95%), Kisan Suvidha (90%) and Agrisnet (16.67%).

*Purpose of utilisation* : By observing Table 2 it is evident that in case of Agricultural officers Apps and Portals like Agrisnet portal (90%), m-kisan (90%), Kisan Suvidha App(70%), Pantala Yajamanyam App (65%) and PKVY portal (10%) were used for purpose of acquiring knowledge and recent information. Soil health card portal (25%) Agrisnet portal (5%), PMKSY portal (5%) and PKVY portal (5%) were used for purpose of transfer of Technology. Rythu bandhu App (100%), PM Kisan Yojana portal (100%), Farm inventory portal (100%), OSSDS (Online subsidy seed distribution system) portal (90%), PMKSY portal (85%), PKVY portal (80%), Pantala Yajamanyam App (20%) and Kisan Suvidha App (10%) were used for the purpose

**Table 1. Ordering of TEPs under frequency of utilisation by extension personnel (N=120)**

Tech-enabled platforms	Very frequently		Frequently		Less frequently		Not at all	
	AO %	AEO %	AO %	AEO %	AO %	AEO %	AO %	AEO %
Pantala yajamanyam App	-	-	23.34	20	76.66	80	-	-
Rythu bandhu App	80	76.67	20	23.33	-	-	-	-
OLMS	85	-	15	-	-	-	-	100
OSSDS	-	-	78.33	-	21.67	-	-	100
Farm inventory portal	-	-	81.67	-	18.33	-	-	100
Agrisnet portal	-	-	5	-	95	83.33	-	16.67
Kisan Suvidha App	-	-	-	-	25	10	75	90
PM kisan yojana portal	75	70	25	30	-	-	-	-
PMKSY portal	-	-	11.67	20	88.33	80	-	-
PKVY portal	-	-	10	15	90	85	-	-
Soil health card portal	-	-	85	83.33	15	16.67	-	-
m-Kisan	-	-	-	-	21.67	5	78.33	95

OLMS (Online License Management System) portal

OSSDS(Online subsidy seed distribution system) portal

**Table 2. Ordering of TEPs under purpose of utilisation by extension personnel (N=120)**

TP	K/I		TT		SI		MR		S		OC		OT	
	AO %	AEO %	AO %	AEO %	AO %	AEO %	AO %	AEO %	AO %	AEO %	AO %	AEO %	AO %	AEO %
PY	65	50	-	30	20	-	15	10	-	-	-	10	-	-
RB	-	-	-	-	100	90	-	10	-	-	-	-	-	-
OLMS	-	-	-	-	-	-	-	-	100	-	-	-	-	-
OSSDS	-	-	-	-	90	-	-	-	10	-	-	-	-	-
FI	-	-	-	-	100	-	-	-	-	-	-	-	-	-
Agrisnet	90	75	5	15	-	-	-	-	-	-	5	10	-	-
KS	70	50	-	-	10	30	20	20	-	-	-	-	-	-
PM Kisan	-	-	-	-	100	100	-	-	-	-	-	-	-	-
PMKSY	-	-	5	15	85	70	10	10	-	-	-	5	-	-
PKVY	10	-	5	15	80	65	5	10	-	-	-	10	-	-
SHC	-	-	25	45	-	-	75	55	-	-	-	-	-	-
m-Kisan	90	60	-	-	-	-	-	30	-	-	10	10	-	-

TP= Tech-enabled platforms  
SI=For supply of inputs including input agencies  
K/I=For knowledge / information  
MR=For sending / making reports  
OC=For organisational communication  
TT=For transfer of technology  
S=For sharing with concerned organization  
OT=Others

of supply of inputs. Soil health card portal (75%), Kisan Suvidha App (20%), Pantala yajamanyam App (15%), PMKSY portal (10%) and PKVY portal (5%) were used for the purpose of making reports. OLMS (Online License Management System) portal (100%) and OSSDS (Online subsidy seed distribution system) portal (10%) were used for the purpose of sharing with concerned organization including input agencies. Agrisnet portal (10%) and m-kisan (5%) were used for the purpose of organisational communication.

In case of Agricultural Extension officers Apps and Portals like Agrisnet portal (75%), m-kisan (60%), Kisan Suvidha App (50%) and Pantala Yajamanyam App (50%) were used for purpose of acquiring knowledge and recent information. Soil health card portal (45%), Pantala Yajamanyam App (30%), Agrisnet portal (15%), PMKSY portal (15%) and PKVY portal (15%) were used for purpose of transfer of Technology. PM Kisan Yojana portal (100%), Rythu Bandhu App (90%), PMKSY portal (70%), PKVY portal (65%) and Kisan Suvidha App (30%) were used for the purpose of supply of inputs. Soil health card portal (55%), m-kisan (30%), Kisan Suvidha App (20%), Rythu Bandhu App (10%), Pantala Yajamanyam App (10%) PMKSY portal (10%) and PKVY portal (10%) were used for the purpose of making reports. No Apps and portals were used for the purpose of sharing with concerned organization including input agencies. Pantala Yajamanyam App (10%)

Agrisnet portal (10%) and m-kisan (10%) PKVY portal (10%) and PMKSY portal (5%) were used for the purpose of organisational communication.

The result may be due to the reason that Agricultural officers use most of the Apps and portals insisted by the State department of agriculture. They rely on such Apps and portals and use the regularly. There is a need to develop multipurpose Apps and portals which cover most of the purposes and match with duties of an Agricultural officer. Agricultural Extension Officers possess knowledge of TEPs but do not use many of the Apps and portals due to the reason that those do not suit their jobs and they lack training in utilisation of these TEPs. *Area of utilisation* : Table 3 shows that the Agricultural Officers used TEPs in Crop Production area under always category in the order of Rythu bandhu App (100%), OLMS (Online License Management System) portal (100%), OSSDS (Online subsidy seed distribution system) portal (100), PM Kisan Yojana portal (85%) and Soil health card portal (45%). Agrisnet portal (80%), Pantala yajamanyam App (75%), m-kisan (65%), Kisan Suvidha App (50%), PMKSY portal (30%) and PKVY portal (25%) were used sometimes in Crop production area. Kisan Suvidha App (45%), Soil health card portal (35%), Pantala yajamanyam App (25%), m-kisan (25%), Agrisnet portal (20%), PM Kisan Yojana portal (15%), PKVY portal (15%) and PMKSY portal (5%) were used sometimes in Crop protection area. Farm inventory

**Table 3. Ordering of TEPs under area of utilisation by Agricultural officers (N=60)**

TP	CPn			CP			FM			M			VCM			PhT			Others		
	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %
PY	-	75	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RB	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLMS	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSSDS	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FI	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agrisnet	-	80	-	-	-	20	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
KS	-	50	-	-	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM Kisan	85	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PMKSY	-	30	-	-	5	-	-	65	-	-	-	-	-	-	-	-	-	-	-	-	-
PKVY	-	25	-	-	15	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-
SHC	45	-	-	-	35	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-
m-kisan	-	65	-	-	25	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table 4. Ordering of TEPs under area of utilisation by Agricultural extension officers (N=60)**

TP	CPn			CP			FM			M			VCM			PhT			Others		
	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %	A %	S %	N %
PY	-	55	10	-	-	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RB	90	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLMS	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSSDS	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FI	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Agrisnet	-	40	20	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KS	-	55	30	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM Kisan	75	-	10	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PMKSY	-	20	10	-	25	-	-	45	-	-	-	-	-	-	-	-	-	-	-	-	-
PKVY	-	25	15	-	10	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-
SHC	25	-	20	-	35	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-
m-kisan	-	75	10	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TP= Tech-enabled platforms; CPn=Crop Production; CP=Crop Protection; FM=Farm mechanisation; M=Marketing; VCM=Value chain management; PhT=Post-harvest Technology; A=always; S=sometimes; N=Never;

**Table 5. Distribution of extension personnel according to overall extent of utilisation of TEP (N=120)**

Categories of Extent of utilisation	AO		Categories of Extent of utilisation	AEO	
	No.	%		No.	%
Low (127 - 142)	18	30.00	Low (116 - 123)	25	41.67
Medium (142 - 157)	32	53.33	Medium (123 - 130)	30	50.00
High (157 - 172)	10	16.67	High (130 - 137)	7	11.67
Total	60	100	Total	60	100

portal (100%) is used always in Farm mechanisation area. PMKSY portal (65%), PKVY portal (60%), Soil health card portal (20%), m-kisan (10%) and Agrisnet portal (5%) were used sometimes in farm mechanisation area.

The reason for the above result may be Lack of sufficient TEPs in all areas like Crop Protection, Marketing and Value chain management areas. State department of Agriculture has developed only few authorised TEPs and the Agriculture Officers are using only those TEPs for authenticity and relevancy. So, there is need for further development of TEPs and their utilisation in State department of Agriculture, which improves the efficiency of Agriculture Officers.

Table 4 shows that the Agricultural Extension Officers used TEPs in crop production area under always in the order of Rythu bandhu App (90%), PM Kisan Yojana portal (75%) and Soil health card portal (25%). m-kisan (75%), Kisan suvidha App (55%), Pantala yajamanyam App (55%), Agrisnet portal (40%), PKVY portal (25%) and PMKSY portal (20%) were used sometimes in Crop production area. OLMS (100%), OSSDS (100%), Kisan Suvidha App (30%), Agrisnet portal (20%), Soil health card portal (20%), PKVY portal (15%), Rythu bandhu App (10%), PM Kisan Yojana portal (10%), m-kisan (10%), Pantala yajamanyam App (10%) and PMKSY portal (10%) were never used in Crop production area. Soil health card portal (35%), Pantala yajamanyam App (35%), PMKSY portal (25%), Agrisnet portal (20%), Kisan Suvidha App (15%), PM Kisan Yojana portal (15%), m-kisan (15%) and PKVY portal (10%) and were used sometimes in Crop protection area. PKVY portal (50%), PMKSY portal (45%) and Soil health card portal (20%) were used sometimes in Farm mechanisation area, while Farm inventory portal (100%) is used never in Farm mechanisation area.

The reason for the above result may be Lack of sufficient TEPs in all areas like Crop Protection,

Marketing, Farm mechanisation and Value chain management areas. State department of agriculture has developed only few authorised TEPs and the Agriculture Extension Officers are using only those TEPs for authenticity and relevancy. So, there is need for further development of TEPs and their utilisation in State department of agriculture, which improves the efficiency of Agriculture Extension Officers.

*Overall extent of utilisation* : Table 5 reveals that majority 53.33 per cent of Agricultural Officers belong to medium level of extent of utilisation followed by low (30%) and high (16.67%) while more than half 48.33 per cent of Agricultural Extension Officers belong to medium level of extent of utilisation followed by low (41.67%) and high (10%).

The possible reason might be lack of trainings, Poor infrastructure facilities, lack of budget, medium achievement motivation and medium organisational support could support the findings of extension personnel. Non availability of authorised and recognised Apps and portals in State department of agriculture (SDA). Lack of appropriate Apps and portals in all areas of Agriculture sector and multipurpose TEPs.

## CONCLUSION

AOs used Rythu bandhu, PM kisan yojana and OLMS very frequently in their jobs while OSSDS, Farm inventory and Soil health card portal were used frequently. They used Pantala yajamanyam, PMKSY, PKVY, and Agrisnet were less frequently used by them and m-kisan and Kisan Suvidha were not at all used by the AOs. AEOs used Rythu bandhu and PM kisan yojana very frequently as a part of their job while Soil health card portal was used frequently, Pantala yajamanyam, PMKSY, PKVY and agrisnet were used less frequently. OLMS, OSSDS, Farm inventory, m-kisan and Kisan Suvidha were not at all used by the AEOs. The research revealed that TEPs were used mainly for the purpose of supply of inputs and for

transfer of technology but they were not utilised for knowledge or skill or information, sending reports and for organisational communication.

The study showed that TEPs were used regularly in the areas of crop production and farm mechanisation while there were no Apps and portals for marketing, value chain management, post-harvest technology, land preparation and pest and disease diagnosis. Finally, the

overall extent of utilisation was medium for both AOs and AEOs. The reason behind such result may be due to their job functioning, lack of proper infrastructure facilities and trainings. The State Department of Agriculture did not develop authorised Apps and portals for extension personnel. Certain Apps and portals developed by the Government were not suiting the working situations of the extension personnel.

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