



## Documentation of ICT Initiatives of Agricultural Research Institutions in Telangana: Application of Nudge Theory

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### ABSTRACT

The application of ICT offers excellent possibilities for empowering stakeholders and establishing appropriate communication between research and extension systems. This paper attempts to document and analyze selected ICT initiatives of three Agricultural Research Institutes in Telangana. Nudge Theory, is employed to identify specific nudges in this ICT initiatives of Research and development institutions. A relatively new concept, Nudge theory proposes positive reinforcement and indirect suggestions as ways to influence behavior. These are simple, low-cost interventions that alter behavior in predictable ways. A descriptive research design was adopted for the study. A nudging framework was developed and nudges were classified under 8 groups viz., internally imposed- mindful encouraging, mindful discouraging, mindless encouraging, and mindless discouraging and the externally imposed- mindful encouraging, mindful discouraging, mindless encouraging, and mindless discouraging.

### INTRODUCTION

Agricultural extension is an educational service which brings information and new technologies to farming communities to enable them to improve their production, income and standard of living. The application of ICT offers excellent possibilities, for empowering stakeholders and establishing appropriate communication between research and extension system (Rathore, 2021). Use of Information and Communication Technology by various agricultural research institutions in the dissemination of information to the stakeholders is in vogue. Stakeholders are receiving the information on various ICT platforms but what are the attracting efforts to accept both means and technologies? ICT tools are utilized mostly for social media and video calling but less for computer, global positioning system, web camera and radio (Panda et al., 2019). lack of training on ICT tools (Singh et al., 2020), diversified occupation, education, annual income, farming system/ allied agricultural activities, mass media exposure, and extension contact (Anand et al., 2020), landholding, family income,

cosmopolitaness-localiteness, social participation, extension participation (Mishra et al., 2021) are some of the determinants reported in general. Need for improving the awareness and infrastructure of ICT tools in rural areas is always felt (Mishra et al., 2020).

Nudge theory is a concept in behavioral science that proposes positive reinforcement and indirect suggestions as ways to influence behavior. These are simple, low-cost interventions that alter behavior in predictable ways (Yanbo et al., 2020). One of its major proponents, Richard Thaler was awarded the 2017 Nobel Prize in Economics Sciences for bringing nudge theory to mainstream attention. The idea is a subtle policy move that motivate people to make decisions that are in their broad self-interest. It's not about punishing people if they don't behave in expected way. It's about making it comfortable for them to make a certain decision (Sinha, 2018). "By knowing how people think, we can make it easier for them to choose what is best for them, their families and society," wrote Richard Thaler and Cass Sunstein in their book Nudge, which was published in 2008. In the layman's language two examples were given such as: Nudge for

Cashless Economy. Incentives such as bonus points, cash back, top-ups, and further discounts encourage customers to use cashless systems of payment. People are being encouraged to adopt it by banners highlighting the advantages of becoming cashless and by earning points for every transaction' *The punch line for encouraging people to use less cash in eliminating black money and the elimination of corruption*'.

Nudge for increasing attendance to library; Encourage more people to visit the library by placing a beverage station at the desk, create a space for collective dialogue, plan a variety of events for the library, supplying digital study resources, Give out audio books. Characteristics of nudging framework involve; self imposed nudges i.e. voluntarily adopted by people to enact a behavioral standard that they feel is important, the externally imposed nudges that do not require people to voluntarily seek them out, the mindful nudges i.e. behavioral standard that people would like to accomplish but have trouble enacting, the mindless Nudges which includes the use of emotion, framing or anchoring to sway the decisions that people make, the encouraging nudges which facilitate the implementation or continuation of a particular behavior and the discouraging nudges which, hinder or prevent behavior that is believed to be undesirable. Keeping these in mind a study was conducted to document the ICT initiatives of Agricultural Research Institutions and find out the nudges in popular ICT interventions.

**METHODOLOGY**

Descriptive research design was adopted for the study. An effort was made to document the ICT initiatives of institution

describing the characteristics of the ICT initiatives. The methodology focused more on what are the ICT initiatives and deliberate effort was made to describe. Telangana state was selected purposively as there are many ICT initiatives and projects that are being taken up. ICAR Institutions, State Agriculture University were considered for the study to document the initiatives. An attempt was made to apply qualitative tool - nudge theory in the field of extension education and to pen down the nudges in most popular ICT related activities which were started by different agricultural research institutions in Telangana.

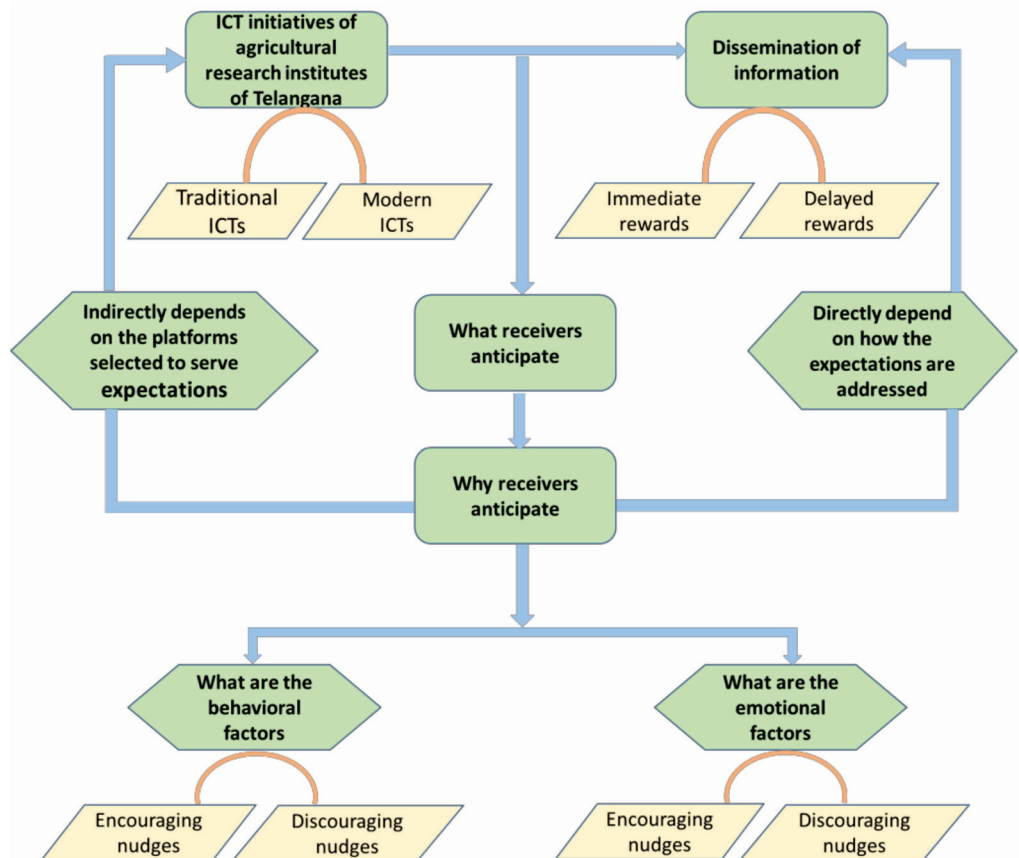
**RESULTS AND DISCUSSION**

**Electronic media wing- PJTSAU**

Professor Jayashankar Telangana State Agricultural University, pioneer in the service of the farmers strive to deliver the latest technologies to the farming community through different means of digital platforms. The Electronic wing has been immensely useful in production of Video capsule programmes; Digital Video Discs (DVDs), Jingles (catchy rhyme) and YouTube live.

The activities involved were; production of DVDs (to develop interactive and descriptive DVDs on various crops and technologies), documenting success stories (documenting the success stories both at research station and in farmer's fields, recording of visuals, voice over of scientists, farmers and experts at different stages of the crop, finally editing and uploading to YouTube channel). These were utilized in the documentation and popularization of technology. This can be acting as a future nudge to motivate other farmers in adoption of new practices (Table 1).

**Figure 1.** Conceptual model for nudge theory framework of documenting ICT initiatives of agricultural research institutions



**Table 1.** Nudges identified in ICT Initiatives of PJTSAU

S.No	ICT Initiatives of PJTSAU	Nudges
1	Phone-in Live programme (Raithu Nestham) T-SAT	Toll Free call Instant Solutions Quick tips for burning issues
2	Radio-Chenu Kaburlu Akashavani-Vyavasaya varthalu Vyavasaya Patashala	Updated agriculture news Timely advice
3	Modern ICTs  DVD  YouTube Channel  Whatsapp Groups	Suitable for literate & illiterate, access anywhere Local language/dialect, Diverse topics alert, Repeated views, Search with key words, Exposure to ocean of information Instant Solution, Accurate advice Scope for further clarification

*Chenu Kaburlu* is another innovative student radio programme initiated on 26 January, 2015. The programmes are broadcasted on every Wednesday from 1.30 am to 2.00 pm in the name of *Vyavasaya Vignana Tarangini/Gruha Vignana Taringini* in Hyderabad 'A' Station. Phone-in- live programmes of Doordarshan (Raithu Nestham) and Phone in Live programmes in T-SAT are other initiatives. Phone in live programmes on Agriculture and allied subjects is being organized on every Monday to Friday of the week for the duration of 60 minutes from 6.00 to 7.00 pm in the name of *Raithu Nestham* by Doordarshan in which a scientist from the university answer the questions of farmers on a pre-informed topic for the day. The Electronic Wing identifies the topics and the resource persons for Doordarshan phone in live programme and coordinates for the successful completion of the programme whereas T-SAT initiated phone in live programme in December 2017 as a part of Agricultural Programme. The programme is being telecasted on every Monday from 4.00-5.00 PM in the name of *Rhythu Mithra*. The topic and the resource persons for T-SAT phone in live programme are identified by the Electronic Wing. Electronic wing is actively participating in all agricultural programmes of *Aakashavani*. Electronic wing has supplied radio scripts to broadcast as *vyavasaya varthalu* for 10 minutes duration every day from 6.50-7.00 PM. *Vyavasaya Patashala* programme broadcasting on every Monday from 7.15-7.45 PM. is also being coordinated by electronic wing. It also imparts and enriches the knowledge base on the farm tele advisors of Kissan Call Centre by providing training on relevant topics. It also supports in preparation of video modules on Village Adoption Programmes, AELP programme and student activities.

In the form of other ICT Initiative Programmes/Innovative programmes; developed Digital Agricultural Knowledge Management portal for video repository for sharing visuals with Extension Centre's of PJTSAU, WhatsApp groups for students participating in *Chenu Kaburlu* in the name of radio club PJTSAU and exchange of ideas in agriculture and sending alert messages to the farmers. The nudge underlying here is the easy operation of WhatsApp by farmers and regular, timely information from the university.

To benefit the farming community, electronic wing has started YouTube Channel in the name PJYSAU Agricultural Videos. It has been running successfully with the subscriber count of 72,000 and 309 videos till date. The success for YouTube videos and the possible nudges can be described as it is created with total 10 playlists and categorized under crop production, crop protection, community science, farm mechanization, success stories, university activities, PJTSAU initiatives, NAHEP and general videos, farmers can easily view video of their own interest.

### National Academy of Agricultural Research Management

The ICAR-National Academy of Agricultural Research Management (NAARM) has developed an application called Agriprioritize, which is a problem Prioritization Technique in Agriculture, used to prioritize problems in a scientific manner. It is calculated through a Value Based Index. Agri Prioritize helps in Prioritizing problem statements of one/multiple locations. Systematic and step by step data entry helps in analysis and to get accurate ranking. Comprehensive Summarization of results based on customized needs (Table 2).

AHP Analyzer- Analytic Hierarchy Process (AHP) analyzer is online tool that facilitates the group decision making by pair wise comparison based on expert judgment values. The Decision Support System (DSS) by web based AHP methodology is converted to Expert System.

a-IDEA is a Technology Business Incubator of NAARM initiating several activities like student sensitization programs, FPO-farmer immersion programs, providing platform to startups for showcasing their ideas having access to 65 ICAR Institutes/ Researchers/Scientists, 722 KVKs, 63 State Universities, 15 Research Institutes. The nudges responsible for successful running of a-IDEA include well equipped laboratories with strong association and networking, having an access to various institutions/scientists, providing funds for innovative ideas and encouraging agripreneurship among students who are really interested. NAARM is also conducting various MOOCS courses for the learners to access from anywhere in the country and enhance their knowledge. They have their own YouTube channel with a subscriber count of 13,000 and also present on all the social media platforms regularly posting the information related to the organization activities and agriculture needs.

**Table 2.** Nudges identified in Initiatives of NAARM

S.No.	NAARM Institute	Nudges
1	Agriprioritize	e-mediated Prioritize problems based on value index
2	AHP Analyzer	e-mediated Group Decision making
3	a-IDEA Incubator	A lab to try ideas Access to Infrastructure Access to networking Seed Capital support
4	MOOCS	An educational handholding tool Synchronous/Asynchronous mode Nurtures the hidden potentials Tool for re-skilling and Up skills

### Indian Institute of Millets Research

Indian Institute of Millets Research coordinates and facilitates millets research at national level through All India Coordinated Research Projects on millets, pearl millet and small millets and provides linkages with various national and international agencies. With regard to ICT usage in the millets promotion, the institute has developed an application called MILLETS FIRST, MILLET MARKET android applications. The farmers can upload the visuals of produce and sell. Success of this application and the nudges in their initiatives include providing marketing access to the producer directly and one can negotiate the price until both satisfy. Institute also has WhatsApp groups for millet farmers across the nation in various languages such as Telugu, Tamil, Kannada, Marathi so that timely information regarding trainings, marketing is communicated through this platform. Nudge underlying here are seeds of various varieties availability, crop management practices were informed directly to millet growers, so they don't miss out relevant information (Table 3).

An effort was made to classify the nudges into a framework. The identified nudges in the ICT initiatives were placed in appropriate divisions based on their merit. The nudges in the initiatives of phone in and use of radio for addressing the issue of stakeholder by PJTSAU which are internally imposed mindful behavioral patterns and encouraging are toll free call and quick tips for burning issues (Table 4). The internally imposed mindful behavioral patterns which are discouraging the undesirable behavioral patterns in the initiative of WhatsApp groups of PJTSAU are to provide instant solution to the stakeholders to discourage procrastination. The a-IDEA and Agriprioritize of

NAARM, Hyderabad which are externally imposed mindful behavioral patterns which encourage a-IDEA acts as lab to try ideas, provides access to networking and seed capital support. The externally imposed mindful behavioral patterns were discouraging the undesirable behavior patterns like discouraging only production and promoting secondary agriculture. The internally imposed mindless behavioral patterns which are encouraging nudges in the initiatives of PJTSAU like YouTube and DVD are appropriate for both literate/illiterate, stakeholders, they can access anywhere, local language/dialect helps in better understanding the issues under discussion, there is further scope for clarification and stakeholders can search the contents with the help of key words. The internally imposed mindless behavioral patterns which are discouraging nudges are the exposing the stakeholders to an ocean of information where there are possibilities of confusion. The externally imposed mindless behavioral patterns which are encouraging include MOOCs as an educational handholding tool, nurtures hidden potentials of active learners, MOOCs can be a potential tool for re-skilling/up-skilling of professionals. The externally imposed mindless behavioral patterns which are discouraging are linkage with market (which has the potential to prevent distress selling) by the stakeholders.

### CONCLUSION

The paper made an effort to document usage of ICTs in transfer of technology by three institutions and to identify the nudges that were contributing to the success of these initiatives. The Nudge theory can be used to promote positive behaviors and keep a strategic distance from negative ones without resorting to extreme mediations. The identified nudges shall help the policy makers to frame effective dissemination strategies. The nudges are just like the pulse of stakeholders. If it can read the pulse, it can design a better programme and policy for dissemination of innovations. It aids individuals in making wise decisions. Based on the impact key decisions can be made while designing the programmes with nudges to benefit the farmers. A healthy amalgamation of behavioral science and emerging technology would add another feather in the effective usage of ICTs.

**Table 3.** Nudges identified in ICT initiatives of IIMR

S.No	IIMR	Nudges
1	Millet first, Millets Market	Linking producer with market Promotes Secondary agriculture
2	Whatsapp groups	Instant Solution, Accurate advice, Scope for further clarification, Multiple languages

**Table 4.** Overall Nudge framework of Agricultural Research Institutions of Telangana

	Mindful		Mindless	
	Encourage	Discourage	Encourage	Discourage
Externally Imposed	a-IDEA, Agriprioritize, NAARM • e-Mediated prioritization of problems • A Lab to try ideas • Access to networking • Seed capital support	Marketing App IIMR • Promotes secondary agriculture (discourage only production)	MOOCs • Educational handholding tool • Synchronous/asynchronous mode • Nurtures hidden potentials • Tool for re-skilling/up-skilling	IIMR Portal • Linkage with market (discourage distress selling)
Internally Imposed	Phone-in, Radio, PJTSAU • Toll free call • Quick tips for burning issues	WhatsApp, PJTSAU • Instant solution (discourage procrastination)	Youtube, DVD, PJTSAU • Apt for literate/ illiterate • Access anywhere • Local language/dialect • Search with key words • Scope for clarification	Youtube PJTSAU • Exposure to ocean of information

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