

Connecting Communities - Improving Livelihoods

Crop Nutrient Management Decision Support System

Agriculture is the main occupation for rural households in India and contributes a significant portion to the GDP of India. The lack of information on farming techniques, crop management practices and latest technologies lead to less yield, increasing input costs and, as a result, reduced income of the farming community. An effort was made to design an expert system that provides tailor-made advisory services on nutrient management and crop management practices for individual farmers at their doorsteps through use of ICT tools such as mobile phones. It was to be piloted among 450 farmers of five villages of Sirkali Taluk in the Nagapattinam District, Tamilnadu, India. The research has been conducted with 217 farmers forming the experimental group who receive the aforesaid services while the other 236 farmers form control groups who follow their traditional agricultural practices.



About the PROJECT

Key FINDINGS

- Mobile phones can be utilised as a last mile information delivery tool to a large number of farmers.
- Tailor made information delivery to farmers at their convenience has resulted in an increase of net income by 15% more than the control group.
- The credibility of Kazi Kadamadai Farmers Federation (KKFF) among farmers was one of the contributing factors for trust on acceptance and implementation of the advisory services. This clearly shows the fact that local facilitating institutions have a major role to play in aggregating individual farmer's needs and dealing with them.

Research Team

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Objectives of the STUDY

- To develop and provide simple, customised and effective last mile accessibility tools for nutrient inputs and management in paddy cultivation using ICT tools through Short Message Service (SMS) and Interactive Voice Response System (IVRS) to farmers mobile phones.
- To test whether provision of such customised information helps in enhancing the livelihoods of farmers in rice cultivation.

The full paper is available at:
<http://bit.ly/enrapict4rlekgaon>

Recommendations

The system developed has been tested for paddy and its varieties. Where it can be populated to other crops and the knowledge base would be required to configure for those crops.

The research has revealed that the farmers are interested in other information such as weather forecast, market price (spot, future and local mandis), availability of credit from formal financial institutions and on insurance schemes.

The scale up process will bring down the cost of the delivery of service (due to higher number of subscribers) and use optimum technologies for such delivery.

The appropriateness of the time of the delivery of the information / alert for the farmers has to be considered while designing such systems which varies on demographic profile.

Using mobile phone for other than making and receiving calls creates excitement and curiosity for Mr. Gunasekaran, a 54 year old farmer who cultivates four acres in Chinnapperunthottam village of Nagapattinam district, Tamilnadu, India. His first experience of receiving farm related information on his personal mobile phone came in the form of SMS and voice calls in his language. When he conveyed his decision to go for a certain paddy variety, on the day of sowing he began receiving a series of periodic & customised information on his mobile phone on advice regarding crop cultivation and nutrient management practices. He mentions that he applied less fertilizer resulting in a saving of INR 275 per



acre this year. He expressed that due to proper nutrient application, his cost on other activities like weeding has also come down with an overall increase in income by INR 550 per acre.

Rural knowledge systems suffer from the lack of effective engagement of the rural communities, due mainly to physical and virtual remoteness. ENRAP (Knowledge Networking for Rural Development in Asia Pacific) is a joint initiative of the International Fund for Agricultural Development (IFAD) and Canada's International Development Research Centre promoting networking for increased knowledge exchange and improved rural knowledge systems to support poverty alleviation. Systematic documentation of rural development efforts has been supporting good development practice; evidence-based knowledge of what works for poor and what doesn't has been useful for policy makers; and improved knowledge management (KM) systems at rural development institutions has improved their effectiveness.

ICTs have helped enhance livelihoods of poor rural communities by strengthening and deepening networking and knowledge-sharing at all levels. The main objective of the ICT for Rural Livelihoods Research is to build research evidence on how ICT interventions impact the livelihood outcomes of rural communities in Asia. More at www.enrap.org

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Technical lead



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One Village One World

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Evaluation of Rural Information Project in Ningxia, China

About the PROJECT

This paper focused on the evaluation of ICTs applications aimed at the promotion of sustainable livelihoods in rural communities. The study was conducted in the Ningxia Autonomous Region in China where the government introduced a village information centre in every village. The ICT intervention in the project was unique to China. It provided one ICT platform which connects 3 types of technology: telecom, TV and internet. This facility impacted the lives of the households living in the mainly agricultural rural counties of Ningxia.

Objectives of the STUDY

To evaluate the overall impact of the '3 network' integration project on livelihoods of rural communities in Ningxia and to identify what those are and the causes for these impacts. Analysis was based on information collected from 628 households in Ningxia as well as interviews and focus group discussions held with the project stakeholders.

The full paper is available at:
<http://bit.ly/enrapict4rlcaas>

Research Team

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Key FINDINGS

85% of respondents reported that the project had made great contributions to their quality of life and development of the local economy and society resulting in increased income raising opportunities. Villagers' awareness was improved and their **capacities built** in accessing ICT services.

Strengthening human capital in terms of improved education, skills, health, and entertainment options impacted the livelihoods of these communities. 72.9% of respondents had participated in distance learning and skill training initiatives, and 67.1% thought that their improved healthcare was due to access to healthcare information via the internet.

The ICT platform enabled farmers to upload and download information to websites regarding agriculture, health and other areas of **social capital**. Their improved knowledge of policies and other relevant information had encouraged more than 50% of the respondents to participate in farmer cooperatives and manage village affairs.

Access to information has enabled farmers to improve their farming practices, receive better market prices, increase sales, and save time and transportation cost - **strengthening their financial capital**. Accessing more diverse means of investment such as insurance and skill training has resulted in 69.3% of respondents earning more income.

ICT application use varied with age, education, type of employment and income levels as well as the geographical region. Regional variations in use were based on how developed the economy was, the amount of local government support received and the existence of a suitable market service pattern.

Recommendation

An appropriate ICT intervention has to have a reasonable operating mechanism that takes into account the demands of the users. It is such ICT interventions which are the most useful to their users.

Income generation and more diverse employment opportunities increase the livelihood impact of ICT interventions. Skill training and valuable market information are components which will increase these impacts.

A diversified financing mechanism which involves private and government financing with local cooperative support is required for sustainability of a user responsive ICT intervention. The government should facilitate this process by providing administrative, economic and legislative support.

The success of an ICT intervention can be determined by the skills of the users to harness it. As such, farmer training programmes and policies to publicise new technology trends and demonstrate results to encourage the uptake of the technology should be part of the process.

Development of a special straw weaving industry

In Xiqu Village, Ningxia, the establishment of a village information centre has changed the smallholder production structure. There are 617 households engaged in the handicraft (straw products) industry which generates 93% of the village income. The information centre, managed by the farmers cooperative for these handicrafts, receives online orders which constitutes approximately 40% of the sales. The distribution of product information via the internet and the availability of phone and video communication has facilitated the signing of more order contracts. Due to the large quantity of orders, the farmers have united to organise the market of the products. They use the internet to collect market information and negotiate sales. The market has extended to Gansu, Shanxi, Inner Mongolia as well as Yanchi County and Huaiquan County of Ningxia. The total income from the sale of handicraft products reached CNY 1.2 million in 2009.



Community members collecting straw to weave their products



Training programme conducted on straw weaving

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Connecting to work: wage labour



About the PROJECT

The project is an action research, which aims to address poverty among casual employees in Sri Lanka by piloting a communication model - specifically an ICT-based job bank for casual wage work in rural areas - focusing on matching demand and supply for agricultural as well as non-agricultural wage work. The project is being implemented by Berendina Development Services, a local NGO, with the research support of the Centre for Poverty Analysis (CEPA).

Key FINDINGS

- Based on the profile of the workers registered for this service it was evident that under-employment is prevalent among wage workers.
- The project has matched about 54% of the population at least once with a potential employer which indicated that workers have become used to the idea of finding work using the telephone.
- Among the target group, both vertical and horizontal networks have increased by a much larger margin than seen in the comparison group. The use of the phone has contributed to this increase in social networks as workers are able to maintain a larger network of information sources on livelihood opportunities.
- This is an ongoing project and it is hoped that the research would generate interesting findings about using ICTs to improve the livelihoods of the rural poor.

Research Team

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Objectives of the STUDY

The objective of the action research is to test the applicability of an ICT intervention to increase the livelihood options available specifically to rural wage labourers. The research aims to ascertain whether information is a bottleneck to improving the livelihoods of rural labourers and the impact the proposed ICT-intervention would have in improving the livelihood outcomes of the rural poor.

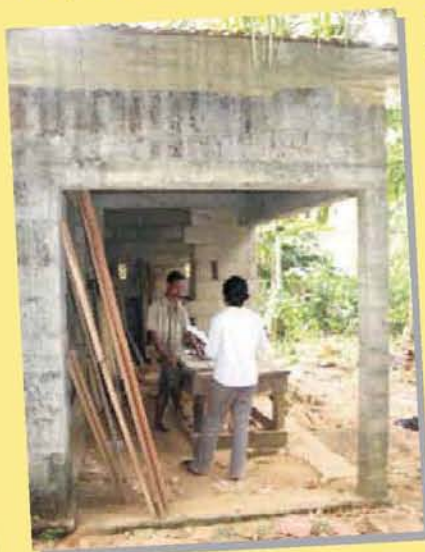
The full paper is available at:
<http://bit.ly/enrapict4rlcepa>

Recommendations

To reach a particular group of poor, such as wage workers, the ICT project needs to be designed in a way that the constraints the poor face to using and maximising the use of ICT can be identified and incorporated into project design.

In order to understand project-specific impacts, the research design needs to incorporate elements such as the use of a comparison or control group, systematic data collection at regular periods including at baseline and as implementation progresses, and the use of mixed methods incorporating quantifiable data and open ended exploratory questions.

"Having a phone is a useful, because it saves me time. Now I can set up a meeting before I go to speak to someone about work."



Piyasena^{*} is a carpenter. The main income earner supporting a household of five people; his wife and three children ranging in age from 9 to 17 years. Piyasena studied upto his O Levels and did some odd-jobs, until he started carpentry 10 years ago. Despite no formal training, he has built up a good reputation in the village. He finds work by word of mouth, through satisfied customers. However, these are mainly within his village and the closeby areas, where there are few affluent households. Most of the work is paid on a piece rate, rather than the more profitable contract basis. Finding it increasingly difficult to meet rising costs of a young family, he is keen to find more work, especially on a contract basis.

Berendina's job agency for casual work provided work opportunities information several times, and he was able to make use of one such opportunity. The employer was not

known to him before, and the work involved supplying 4 doors and 22 windows – a big contract for Piyasena. He is still working on the windows, but is happy as he has added a new employer – and most importantly, someone who makes timely payments – to his network. He is increasingly using his phone to get information about work opportunities as more and more people in his network have phones.

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PRACTICAL ACTION

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International Development Research Centre

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Linking ICT Project and Rural Livelihood Diversification in Agrarian Reform Communities in the Philippines

About the PROJECT

The e-AGRIKultura is a government project providing infrastructure and ICT training for members of six farmers' cooperatives from different provinces in the Philippines. The main goal of the project is to provide fast access to information on agricultural and farming technologies through the Internet and visual media.

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Objectives of the STUDY

This study documents the lessons learnt from the e-AGRIKultura project. The role of ICT in the facilitation of rural livelihood expansion will be elucidated with e-AGRIKultura as an illustration. This will facilitate the assessment of the extent in which ICT complements the evolution of more diverse rural livelihood.

The full paper is available at:
<http://bit.ly/enrapict4rlupss>



Key FINDINGS

ICT facilitates the flow of information to rural households who need them most, for optimum access to various factors of production. Income significantly correlates with living condition index and livelihood index. The ICT and livelihood index (based on a scale assessing the relationship between provisions of various ICT services as a conduit to livelihood expansion) is correlated with non-farm income. Information that is easily accessed through ICT facilitates the expansion of livelihood opportunities among the rural households. While farming remains to be their major livelihood (as should be the case in the context of food security), alternatives are available that can mitigate their economic vulnerability.

ICT in the sustainable livelihood framework can best contribute to total income - if there is complementation in terms of expanded employment opportunities, more specifically to livelihoods outside the farm contributing to total income. Rural households are better off with ICT project interventions (facilitating access to information) than otherwise.

Recommendation

There is a need for the institutionalization of local government support, especially on policies that will serve as catalysts of public-private partnerships essential for the success of projects on technology.



Picture 2:
Printed Information Available in the Center



Picture 1:
e-AGRIKultura Center (Information Center)

Future Research

More insights from similar quasi-experimentation to include different kinds of integrated interventions with or without ICTs with a control group which is not exposed to any development intervention. It is also imperative to examine the space-time dynamics in which ICTs and rural development are linked.

LAMPCO: Los Arcos Multi-Purpose Cooperative

LAMPCO is one of the six beneficiaries of the e-AGRIKultura project. This cooperative is based in Prosperidad Agrarian Reform Community (ARC) in Prosperidad, Agusan del Sur Province in Southern Philippines. The ARC was established in 1995 and is rated level 2 (in a maximum of 5) with strengths in facilitation of access to basic social services and land tenure improvement, but weak in farm productivity and income. Through the project, market information is made available online and farmers are able to access data such as prices. This information is a crucial bargaining tool of farmers and guides their decisions in selling their produce. Through the Internet, LAMPCO is able to access the programme of a foreign Non-Government Organization (NGO) based in Oceania. The NGO provided farm animals, which were passed from one household to another to bear offspring to help increase the income of the households.

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LifeLines: Livelihood Solutions through Mobile Technology

About the PROJECT

LifeLines is a telephone based agro-advisory service, which provides personalised technical expertise in agricultural practices, seeds, market situation, prices and other allied activities. The project was started by IRRAD and aimed at enhancing the livelihoods of the poorest in Mewat (a socio-economically backward region of Haryana with communities primarily engaging in traditional methods of agriculture).

Research Team
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Objectives of the STUDY

To evaluate whether improved access to information and knowledge facilitated by an ICT intervention could enhance the individual and collective capabilities of one of the most marginalised and technologically regressive communities to improve their livelihoods.

The full paper is available at:
<http://bit.ly/enrapict4rlirrad>

Key FINDINGS

The usage of the technology began with the realisation that technology could add value.

ICT interventions with the poor and marginalised is possible if due care has been paid to the need and the context of the community.

Overall, there was an increase in the annual income of the farmers after using LifeLines services. The average income of users of LifeLines was about 37% more than the non-users of similar socio-economic profiles.

67% said that there was an increase in savings and earnings because of increased productivity and disease control as a result of LifeLines services.

Increase in produce was the most immediate and visible benefit to the farmers and restored their confidence in agriculture practices as a profession.

73% claimed that Lifelines had positive impacts on health as now they take better nutrition, 57% claimed the visits to the doctors has reduced and 26% claimed increases in work productivity because of the increased ability to perform domestic chores.

They had increased knowledge about new agricultural practices, technology, seed, fertilizers etc.

97% respondents indicated that LifeLines has enhanced their lives and 93% were in favour of the continuation of LifeLines.

LifeLines has the potential to be replicated because of the initial encouraging results and willingness of people to take it forward due to the positive changes the services brought in almost every aspect in their lives.

Recommendation

Make the communications prompt and enriched to improve response time.

Add multi-media features and introduce 3G applications to increase relevance of the technology.

Creating a local server to share locally generated knowledge.

Case study

While being asked about the difference the LifeLines had in general and in agriculture in particular during PRA exercises the farmers said:

'pahle hum paramparic tareekon se kheti karte the, lekin lifelines ke baad nayi nayi cheezen pata chali hai jidhe kharab under kheti ko lekar uthate hai. hum logon ka iske pyayog se hone wale faydon se poori tarah baholati hai. iske ishtelaai se humse se kuch logon ko bahut fayda hua hai.'

(Earlier we used to practice agriculture with traditional methods but after LifeLines we came to know many new things and are hopeful towards agriculture. We are aware of the advantages of the services and few of us have got benefitted in a big way from LifeLines).

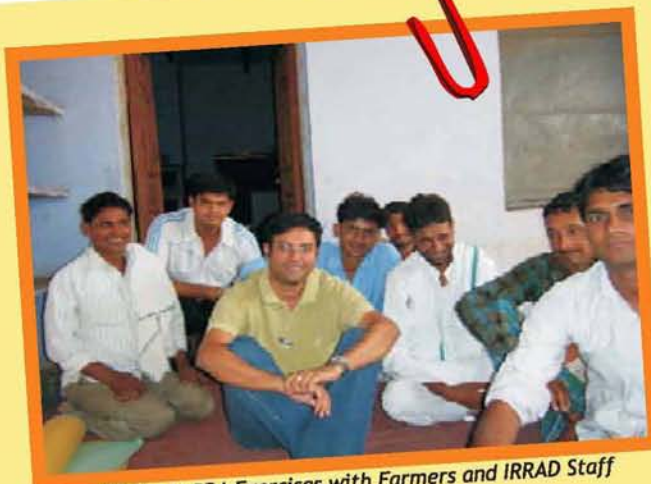


Photo 1: PRA Exercises with Farmers and IRRAD Staff

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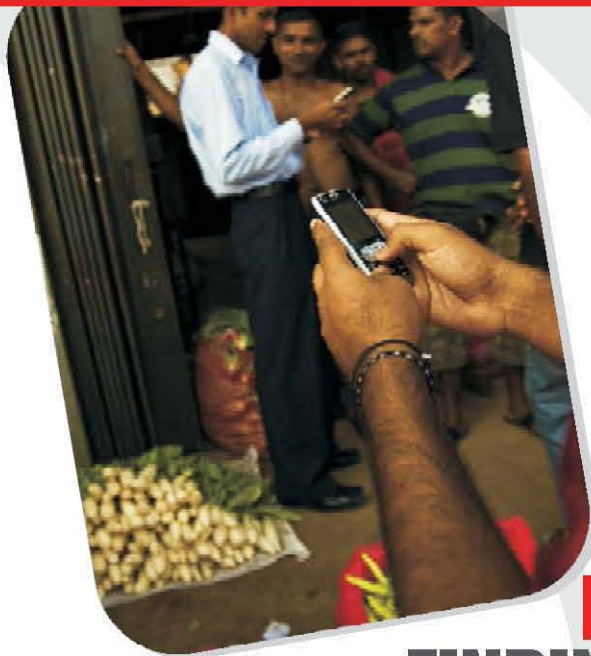


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Connecting Communities - Improving Livelihoods

Price Transparency in Agricultural Produce Markets



Key FINDINGS

- The new service visibly reduced farmers' vulnerability to price trends, allowing them to realise higher prices in the sale of their produce (an average premium 23.4% on the average market price for their produce on the day of sale).
- Farmers showed strategic depth in their livelihood decisions, using the service to time their harvest and determine selling dates.
- Increased price transparency translated into increased interest in cultivation practices for higher value crops outside of the farmer's traditional forte'. This has created increased demand for crop advisory and extension services.
- It is often financially and legally impractical to go after small farmers in developing countries who renege on forward contracts. The high volatility in spot markets makes forwards less viable for buyers as well. Even if the increase in price transparency eventually decreases volatility to the extent where forwards are more viable, it might still require the creation of innovative forward instruments that do not have a fixed strike price but are rather tied to the prevailing market prices through price floors and caps.

About the PROJECT & OBJECTIVES

This Action Research Pilot (ARP) in Sri Lanka sought to explicate the livelihood benefits for a representative sample of small farmers in the country from using an ICT based service called Tradenet, which aims to increase price transparencies in the agricultural sector of the country. Launched in December 2009, Tradenet provides real-time, wholesale market price information for fruits and vegetables in Sri Lanka via mobile phones. The new service is the result of a partnership between a not-for-profit company called Govi Gnana Seva (GGS) or "Farmer Intelligence Service," engaged in the collection of wholesale agricultural commodity price information in the country; and Dialog Axiata PLC, the largest mobile operator in Sri Lanka. Available nation-wide with price information from multiple markets, the new service aims to reduce the significant price volatilities (both intra-day, inter-day as well as seasonal) prevalent in the sector due to high information asymmetry.

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The full paper is available at:
<http://bit.ly/enrapict4rllirneasia>

Recommendations

Continuously build stakeholder buy-in:

Creating the right social, institutional, legal and market conditions to make forward contracts viable, requires the confluence and support of multiple stakeholders. This makes continuous advocacy a necessity.

Meet the demand for additional services:

Access to real-time price updates for any crop creates demands for crop advisory and extension services that need to be met. If unmet, farmers will continue to be restricted in their crop choices, which limit their ability to react effectively to the demand signals in the agricultural sector.

Capacity building for farmers: Country-wide differences in farmers' level of comfort with non voice-based technologies such as SMS, will dictate the level of capacity building required for technology acceptance. However this doesn't preclude the need for more awareness building amongst the small farmer community on

how to leverage this new service for better livelihood outcomes.

Continuous research: Whilst this study has shown promising results on farmer livelihoods by the use of ICT based services for increasing price transparency, the longer term impacts are less clear. This necessitates the need for further research. Furthermore, if price volatility can only be significantly reduced by the use of forward contracts, then evidence based research will go a long way to creating the necessary preconditions and contract innovations required to make forward contracts viable.

Sustainability of ICT based solutions: As the case of Tradenet in Sri Lanka shows, there are viable business models to ensure the viability of such initiatives in the long term. However building the business case, requires continuous research on the impacts and needs of small farmers so as to increase the value proposition to all stakeholders, which includes both small farmers as well as the providers of such services.

The story of Dissanayake's cabbage crop.



When Dissanayake's cabbage crop was ready for harvesting he did not harvest immediately because the price alerts informed him that the prevailing cabbage price in the market were rather low compared to his expectations. Then one day he noticed increasing price trends over the course of the day. In the morning the price was USD 0.18/Kg. By late afternoon (and three price alerts later) the price had gone up to USD 0.32/Kg. Realizing the upward trend, he quickly gathered his family and harvested this cabbage crop even using torches at one point since it was past sunset when the final cabbage was harvested. He quickly transported his crop to the market and sold it off. The final price he received was USD 0.41/Kg which was a premium of USD 0.14 (\$1.896) on what he had hoped to make that week for his cabbage crop

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