Powering Disruption in Extension Advisory Services

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Agriculture is getting information intensive

- Large Numbers - Farmers, Organizations, Personnel
- Complex systems of NARES institutionalized and interlinked
- Administration of development process, credit, agribusiness and market related activities are complex domains in agriculture
- Inherent vulnerabilities and instantaneous response to climatic & socio economic transformations
- Shifts in international and domestic policies
- Big Data – Small Efforts
Business as usual?  
*Disruption is happening*

Innovation to creates new market and value network that eventually disrupts existing markets and displaces existing products and alliance.

**Are we disruption ready for Extension Advisory Services?**

- The world’s largest taxi company owns no taxis (Uber)
- The largest accommodation provider owns no real estate (Airbnb)
- Large phone companies own no telco infra. (Skype, WeChat)
- Popular media owners create no content (Facebook)
- Largest software vendors don’t write the apps (Apple/Google)
- The fastest growing banks have no actual money (SocietyOne)
The Singularity in EAS is here!  
*Mainstream to Disruption*

**Complemetor systems**

- **eNAM** = Amazon – (LBM+Retailers + Aggregation + Delivery + Payment gateway)
- **FP / RKMP** = Google - (SEO + Crowd Content + Scale + Personalization)
- **eParwana / AeFDS** = Uberization – (Fertimeter + Diagnostics+ Crop Profiling + Workflows)
- **Soil Health Cards** = SMART farming – (Internet of Things + LBM + GPS + Google Maps)
- **Input supply app / Market App** = UberApp – (aggregated demand+ LBM+3D Printing + Block chain)
Powering Disruption
Avenues

Mobile/Cloud Computing – smart phones, wearables

Internet of Things – everything gets connected in the internet

Location-based monitoring - satellite and remote sensing technology, geo information, drones, etc.

Social media - Facebook, Twitter, Whatsapp etc. Network graph theory?

Big Data - Web of Data, Future Farming Technologies, Drones, Linked Open Data

Blockchain – Traceability, mobile payments, efficient supply chains

*High Potential for unprecedented innovations!*
Digital Extension Dilemma
Mobile Apps integration – Production to Markets

- Apps development in Partnerships
- Integration with Value chain

INDIA CASE
- E.g.: Linking Crop Insurance, e-procurement, e-NAM +Linking to Unique IDs / Bio Metric Systems + Data analytics
Disruptive Technologies

ePOS – Electronic Point of Sale

Aadhaar enabled Fertilizer Distribution System (AeFDS)

**OBJECTIVES:**
ENSURE TIMELY & CORRECT DISTRIBUTION OF FERTILIZERS ACROSS VALUE CHAIN

**BENEFITS:**
- Deliver exact qty. of fertilizers - crop wise
- Streamline fertilizer distribution reducing malpractices / hoardings
- Check non-farmers sale of fertilizers
- Ensure subsidy reaches only farmers

**CONSUMPTION PATTERN**
(India, 2010-11)

- UREA
  - 1.8
- COMPLEX
  - 1.4
- DAP
  - 0.9
- NP
  - 0.4
Disruptive Technologies
Big Data integration – Production to Markets

- Open and flexible cloud service platform
- Strategies for local governments, Industry
  10 M USD - white fly in cotton

- Multiple layers – Decisions
  Marketing, Credit, Services, Crop Insurance

- Weather, Risk Awhere for small farmers
Disruptive Technologies

Blockchain – Production to Markets

- Food Traceability
- Mobile payments, loans and insurance
- Efficient supply chains

- PLANNING
- INPUTS
- ON-FARM PRODUCTION
- STORAGE
- POST-HARVEST PROCESSING
- TRANSPORT
- ACCESS TO MARKETS

• Help farmers plan
• Reduce
• Help extension
• Improve links
• Increase efficiency
• Reduce costs
• Increase ability of

what, when to plant
counterfeits
services reach
of transport
smallholder farmers
Disruptive Technologies

*IOT integration – Production to Markets*

- Crop, Animal, Equipment Monitoring
- Research, Variable rate fertility, mapping
- Disease diagnostics
- Water stress, Crop yield, soil erosion
- Storage losses
- Transportation losses
Disruptive Technologies

Ag Value chain – Production to Markets – Global Experiences

PLANNING
- FarmBook Business Planner
- MyAgro
- Farm Radio Int’l (FRI)
- Digital Green
- Avaaj Otalo
- Health Network International
- One Acre Fund
- Naatal Mbay, Senegal
- Loop transport/selling
- Esoko market price service (Ghana, more)

INPUTS
- mFarm
- GES eVouchers
- Nigeria
- Digital Green
- harvest loans, East Africa
- Hello Tractor (Nigeria)
- Avaaj Otalo
- Health Network International
- More)

ON-FARM PRODUCTION
- GES eVouchers
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Storage
- One Acre Fund
- Naatal Mbay, Senegal
- Loop transport/selling
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POST-HARVEST
- Processing
- Transport
- Esoko market price service (Ghana, more)

ACCESS TO MARKETS

PRODUCTS

MOBILE MONEY PRODUCTS FOR SAVINGS, PAYMENTS, CREDIT, AND INSURANCE

PROJECTS

CIAT used multiple sources of big data to predict when to plant, what to plant. Farmers who listened avoided losing US$3,000.

CHAI reduced crop loss by 40-65% by getting timely localized weather.

In a one-year pilot of using satellite imagery to support pastoral resource management in Ethiopia, herd deaths fell by half.

EVIDENCE

- E-Verification, Uganda
- Index-based livestock insurance, Ethiopia
- AVANSE Haiti e-vouchers
- Recording
- Kenya Livestock Insurance Program

Digital Green: low cost video helped increase cost effectiveness, adoption of new technologies led to 26% better service to farmers who listened saved for seeds and fertilizer. They’re seeing yield increases of 50% to 100%. That translates into around $150 more income a year

One Acre Fund: loan led to significant increases in farmer profit ($170. Naatal Mbay, the farmer-owned cloud database, resulted in higher quality fertilizer, more sharing of better agricultural practices, and ultimately a 25 percent increase in maize yields.

In Haiti, a mango exporter saved more than $1,600 per year by shifting purchases from cash to mobile.

IDEO.org prototyped Spoilage Sensor, a NOT (just subscribers), increasing income by 8-9% price increase

With e-banks, all farmers get 3,000 women retailers to increase their income by up to 300%, and farmers receive prices 20-30% higher.

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Options for Disruptions
Global Experiences (Shaik, 2016)
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Global Experiences (Shaik, 2016)

- Information Systems
  - CMS/ DSS/MIS/GIS
- High Impact Digital Extension
  - Knowledge
- Modeling Solutions

Farming System Mix
Gov't Schemes

Access to Credit
Insurance

Digital Innovation System

Pre Production
- Land Selection
- Weather Crop Selection

Production
- Land Preparation
- Sowing
- Input Management
- Water & Fertiliser Management
- Pest Management

Post Harvest
- Food Processing
- Packing
- Transportation

Marketing

Kenya Tangaza Pesa

Ag Value Chain Network
FACE Orange Telecom Uganda

Nigeria NIRSAL
Risk Sharing System for Ag Lending
$3.5 Bn USD

Zoonia e-vouchers
Zambia, Malawi, Mozambique
Zimbabwe 1 million vouchers

Sensory and Proximity Devices UAV

Digital Networking Solutions

E commerce / M commerce
Enabling Disruption: Envisioning Extension Advisory Systems

Pilots to Policies – Operational Model (Shaik, 2016)
Doing the right thing is wrong

Agri centric Digital Strategies OR Digital centric Agriculture Strategies?

- Technology Fad to Applications (POC)
- Kodak’s case (Steve Sasson) is similar to Hybrid rice case (Sampath & Mohanty)
- One value chain – One POC
- Mobile/Cloud Computing – smart phones, wearables
- Internet of Things – everything gets connected in the internet
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- Big Data - Web of Data, Future Farming Technologies, Drones, Linked Open Data
- Blockchain – Traceability, mobile payments, efficient supply chains

Thank you