



Information Systems for Enhancing Livelihood  
Security of Tribal Farmers in Gujarat: Agri-  
Business Supply Chain Opportunities and  
Challenges

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## Structure of Presentation

- Why Information Systems (IS)?
- Rural Livelihood Systems in Dahod District
- Role of IS in Supply Chain in Dahod District
- The Planning Process in Gujarat
- A Case
- Conclusion

# Why Information Systems?



- Optimisation of
  - Transaction Cost and Time
  - Coordination Cost and Time
- Moderators for
  - Taking Informed Decisions
  - Maintenance of Information Currency
- Space Provisioning
  - Mode of Transactions
  - Create environment for all the stakeholders to Collaborate
- Demands
  - Information planning
  - ICT planning

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# Rural Livelihood Systems in Dahod District of Gujarat



- Dahod District
  - Semi-Arid
  - Rain-fed Agriculture
  - Tribal Population Density is high
  - Seasonal Migration to meet Food and Livelihood Security
    - It has become an integral part of their life
    - An alternate source to farming

**Challenge: Provide Livelihood Security Opportunities at Local Level**

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## Rural Supply Chain Management: What Farmers' face in Dahod



- Inherited Tacit Knowledge
  - Traditional Farming Practices
  - Age-old input and output management
    - Inadequate domain support
  - Decision Support Systems
    - Local Weather Forecasting
    - Use of inputs
    - Predictions on Yields
    - Value addition techniques
    - Marketing Produces
      - Exploiting Middlemen
    - Alternate Employment Opportunities
- Food Security Challenges lead to poor negotiating platform
- Poor Infrastructure
- Food Security threshold is temporal and household specific- depends on
  - Landholding, family size, income generating opportunity
- Limiting attitude to adopt and use technology
  - Less inclined to non-farm practices (secondary to their livelihood security options)

Result: Information Need Varies; Information Assymetry; Negative Effect on Supply Chain; Unsustainable Livelihood Options and Seasonal Migration

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## Rural Supply Chain Management: Farmers' Need

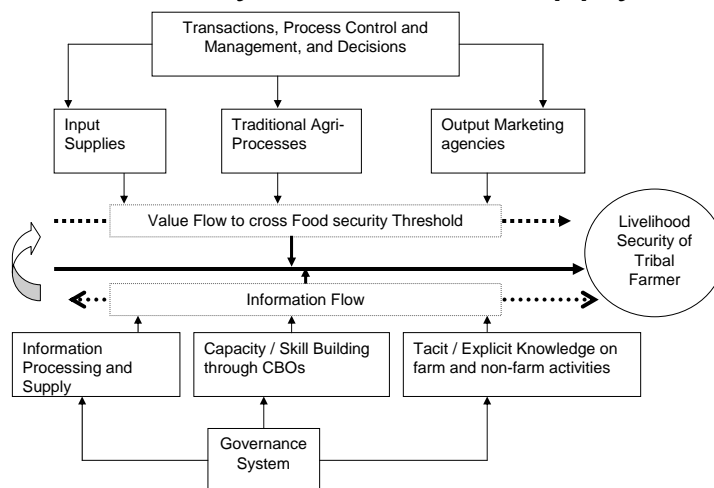


- A market for transactions in the vicinity
  - Information on market, demand and costs (to be available on demand)
  - Exchange of Goods and Services
  - Access to better and reliable process knowledge (**Explicit Knowledge**)
    - Skill Enhancement, Training & Exposures
    - Appropriate Technology Adoption
    - Better Farm practices (**Scientific Knowledge Acquisition**)
    - Value addition mechanisms
- Quality infrastructure
  - Electricity, Water and other farming support
  - Banking
  - Transport
  - Communication

Need: A sustainable Local Information Infrastructure to leverage "Tacit Knowledge" with active support of "Explicit-Knowledge" for effective Collaboration among farmers, government, buyers and supporting institutional mechanism

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# Information Systems and Supply Chain



**Resource Based View of Value in the Supply Chain for Livelihood Security**  
(Adapted from Craighead and Shaw, (2003))

# SCM: IS Perspective

Information System Attributes for Farmers		Influencing Stakeholders		
		Input Marketing Agencies	Governance Systems	Output Marketing Agencies
Transactions	Local, Agency and location Controlled	Place, Mode, Cost, Frequency, Latency		
Process Management Controls	Inherited Tacit Process Knowledge	Input quality, Price, Process Knowledge Transfer	Support on skill enhancement, Technology transfer, Information sharing on Policy, Explicit Knowledge Sharing	Demand, Place of purchase, Frequency of purchase, Credit Cycle
Decisions	Information Asymmetry	Decisions on farm inputs, Supply agencies, Credit Cycle	Framing process improvement and technology adoption	Output marketing decisions on price, place and credits

## What is Needed?

- Value Flow to help Tribal to
  - Cross Household level Food Security Thresholds
    - Support with process knowledge
    - Facilitate input and output markets
    - Encourage
- Information Flow through Governance Systems to ensure Livelihood Security
  - Capture information needs (Tacit/Explicit)
  - Supply information on demand
  - Manage Information Assymetry

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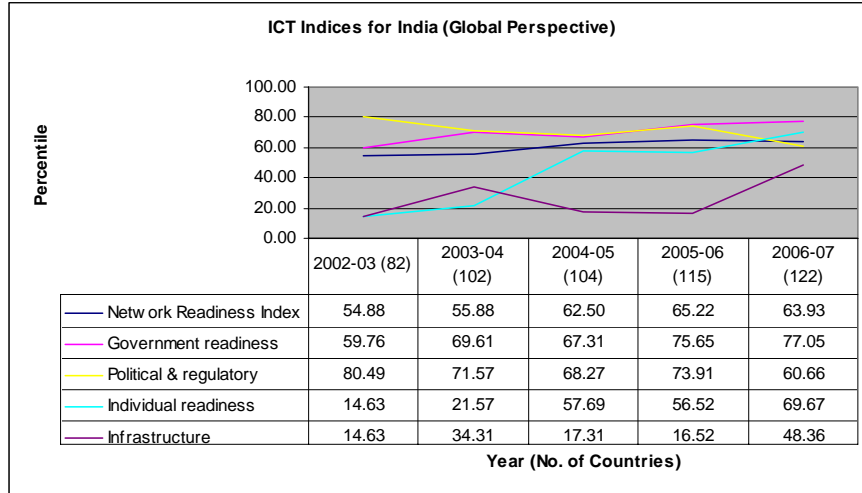
## IS Policy

- Various government, NGO and PPP sponsored e-government/ e-governance projects
- Common-service Centres (CSC) through NeGP (Rs. 15,000 Crores to be spent by Sept'08)
- Village Knowledge Centres through Mission 2007
- Village Resource Centres (ISRO)
- Information Kiosks
  - E-Gram Services at Panchayats level (GoG/NIC)

Assessment Policy: E-Readiness Exercise, Global IT Assessments (INSEAD)

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## Indian ICT: Its place in Global IT Roadmap



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## ICT Readiness in Gujarat

E-Readiness Index	Level of Gujarat State	No. of States in the Level and Higher
Environment	Level 1 (Leader)	6
Readiness	Level 2 (Aspiring Leader)	8
Usage	Level 3 (Expectant)	14

Note: States are grouped Six Levels: Least achievers, Below-Average Achievers, Average Achievers, Expectants, Aspiring Leaders, Leaders

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## ICT Readiness : Dahod

- No Assessment Policy formulated for districts
- SWAN Project is behind schedule (MIT-2007) in the State
- SWAN has its network up to Block Level (1 Mbps leased BSNL-link)
- NIS portal available at the district headquarter and data entry is being done on batch mode for district administration

Issue: What will happen to village level connectivity for supporting SCM for the farmers?

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## Rozam Village- A Case

- **Village Profile**
  - 329 Households (HH), 97 Percent Tribal
  - Average Land holding 2.12 Acres, food security for 8 months
  - 65 Percent of HH migrate for 3-4 months
  - 80 Percent of HH income from migration
- **Interventions**
  - Sadguru intervened with JFM, Watershed Management, Agro-forestry
  - Creation Village level Institutions
    - SHGs for credit and Vermiculture
  - Encouraged to adopt Floriculture and non-farm activities through exposure visits, training, and pilot projects
  - Traditional skill enhancement
  - Specific training to adopt floriculture techniques (Domain exposure)
  - Creation of Assets (Tube wells, drip-irrigation, nursery etc..)

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## Rozam Village: SCM Opportunities

- Tremendous growth in CBOs
  - Mange inputs like vermicompost
  - Watershed management
  - Support to governance system
  - Attitude to adopt technology
- Trust in Sadguru, the NGO
  - Capacity building
  - Acquire process knowledge
  - Inclination to value addition excercise

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## Rozam Village: SCM Challenges

- Poor Information Infrastructure
  - Visible digital divide
  - Inadequate IS policy
- Poor Access to Physical Infrastructure

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## Conclusions and Observations

- Initial resistance of tribal farmers to
  - Adopt new technology
  - Adopt alternate farming methods
- Livelihood security mostly based on Food security
- Opportunities demonstrated through
  - Pilots, exposure visits for better farm practices
  - Building CBOs
  - Establishing a link between traditional tacit knowledge and skill based training
  - Exposure to process improvement techniques
- Challenges are in the form of poor information infrastructure and inadequate attempt to address digital divide at the village level

**Benefits:** Inclinations to produce and market floriculture produces, participate in a SCM to meet food security thresholds and attempt to meet livelihood security