

# Gender, Technology and Agricultural Value Chain: Can Market Access Help Us Improved Nutritional Security?



Mohammad J. Alam\*, Dipok K. Chowdhury\* & Nazmun N.  
Ratna\*\*

\* Bangladesh Agricultural University, Bangladesh

\*\*Lincoln University, New Zealand

**Seeds of Change Conference**  
**2-4 April, 2019**  
**University of Canberra, Australia**

**‘Blending development and business’ in  
agricultural value chains using technology  
(android mobile and app)**

**LOOP – a market system**

# Loop – a marketing system

- LOOP is introduced by DG India in which farmers sell their vegetables and access markets through village level **aggregators**.
- Aggregators collect the vegetables daily at farmgate, identify the potential best market to sell, manage its transport to and sale at market, and distribute payment back to farmers in a very transparent way.
- LOOP uses android app for transaction entry and accounting, SMS receipts, and near-real-time analytics dashboards.
- This may solve the conventional `**faith`** based similar activities which might be unsustainable over time.

# LOOP Intervention

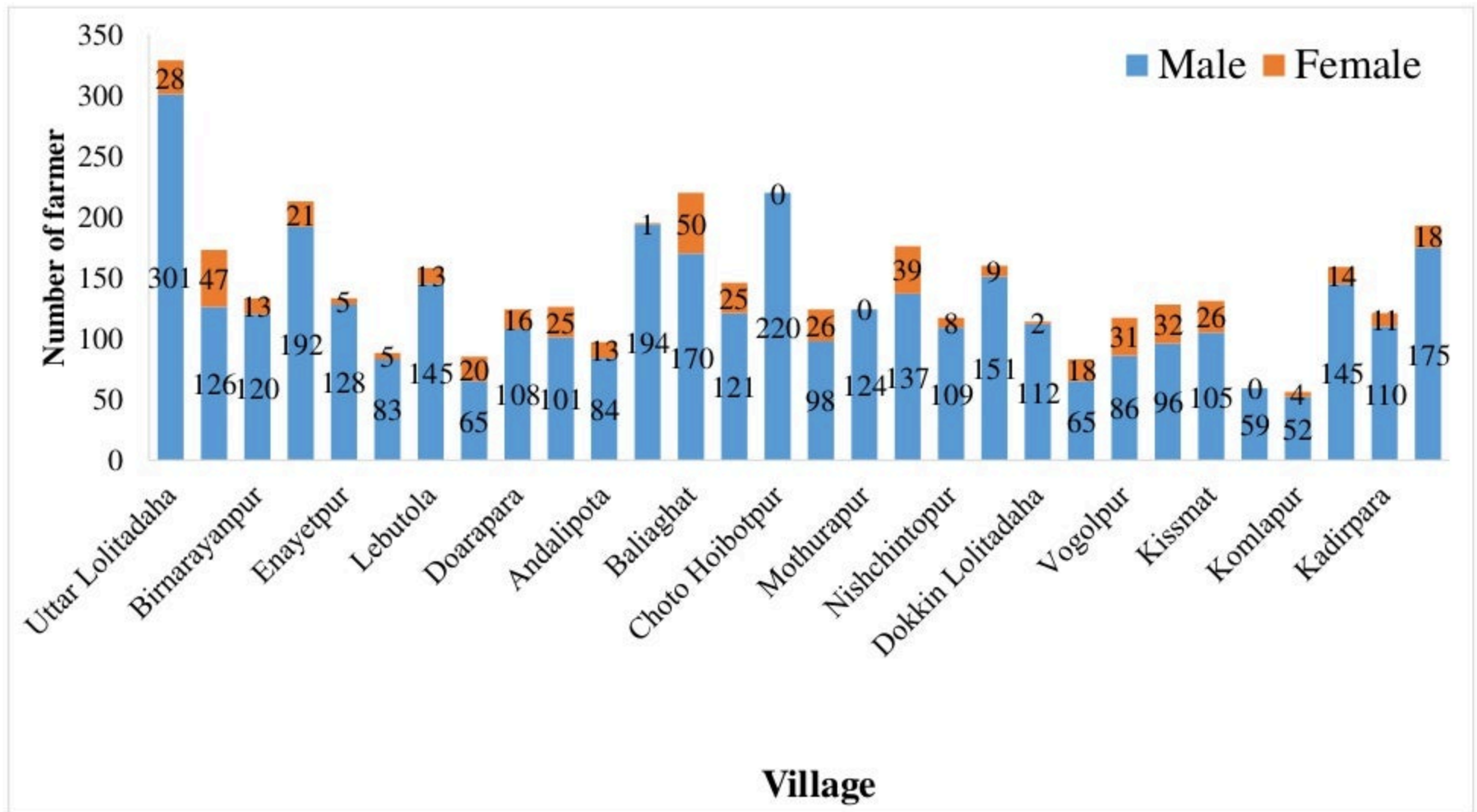


District	Jashore
Upazila	Jashore Sadar
Union	Churamankati, Haibatpur, Kashimpur and Lebutala
Village	30

# Application of technology among LOOP farmers

- 521 female out of 4018 farmers
- Aggregators are equipped by smart mobile phone with installing LOOP application.
- Male and female farmers equipped by mobile phone - receiving quantity and sales information.
- LOOP app designed with farmers registration, quantity, price, transportation use and their rent, payment information, wholesaler, market, vegetables category etc.
- Once vegetables sold out, farmers received digital receipt through mobile phone with sales information such as quantity and price.

# Distribution of female farmers



Source: LOOP dashboard

# Research Questions

- **What are the implications of the current scheme?** How does the Produce Aggregation Service of Loop influence current quantities traded, varieties, and prices of vegetables across the value chain?
- **How can the scheme be made more nutrition-sensitive, safe and equitable?** What complementary actions to the current aggregation service – *e.g.* providing information or other services to traders and retailers, or vertical integration of Loop with retail components of each VC – would improve Loop's potential to improve the **intake** of vegetables amongst the poor?
- How might market and individual outcomes, **specifically women's empowerment outcomes** along the chain, change with these complementary actions?

# Methodology

## Mixed Method approach

- ✓ Focus Group Discussion
- ✓ Key Informant Interviews
- ✓ Personal Observations
- ✓ Spatial Group Model Building (SGMB)
- ✓ System Dynamics (SD)
- ✓ Pro-WEAI



# Modules in SGMB

- **Production and distribution** practices across the chain, including timing, input use, and assessment of actor profitability.
- **Marketing patterns** and trade flows, including information on flows emanating from intermediaries and *mandis*, seasonal variation in trade patterns, and the spatial characteristics of target value chains;
- **Adoption and learning** to look at uptake and sales into Loop-facilitated chains;
- **Capital formation** and investment behaviour in market-oriented infrastructure e.g. storage facilities, transport, information systems;
- **Value chain actor** (including Loop) financial profitability;
- **Empowerment of female value chain actors** in the domains of production, resources and income.
- **Local institutions and governance** patterns.

# System Dynamics (SD) Modelling

- SD technique - addressing the impact of intervention options in complex systems such as agri-food value chains or marketing systems.
- It specifies a series of non-linear differential equations that describe the processes, flows, and interactions that take place in complex systems.
- SD models serve as a virtual laboratory to conduct “what-if” scenario analysis of different intervention options, allowing practitioners to measure their returns and trade-offs (Dizyee et al. 2017; Rich et al., in review).

# Sample Size

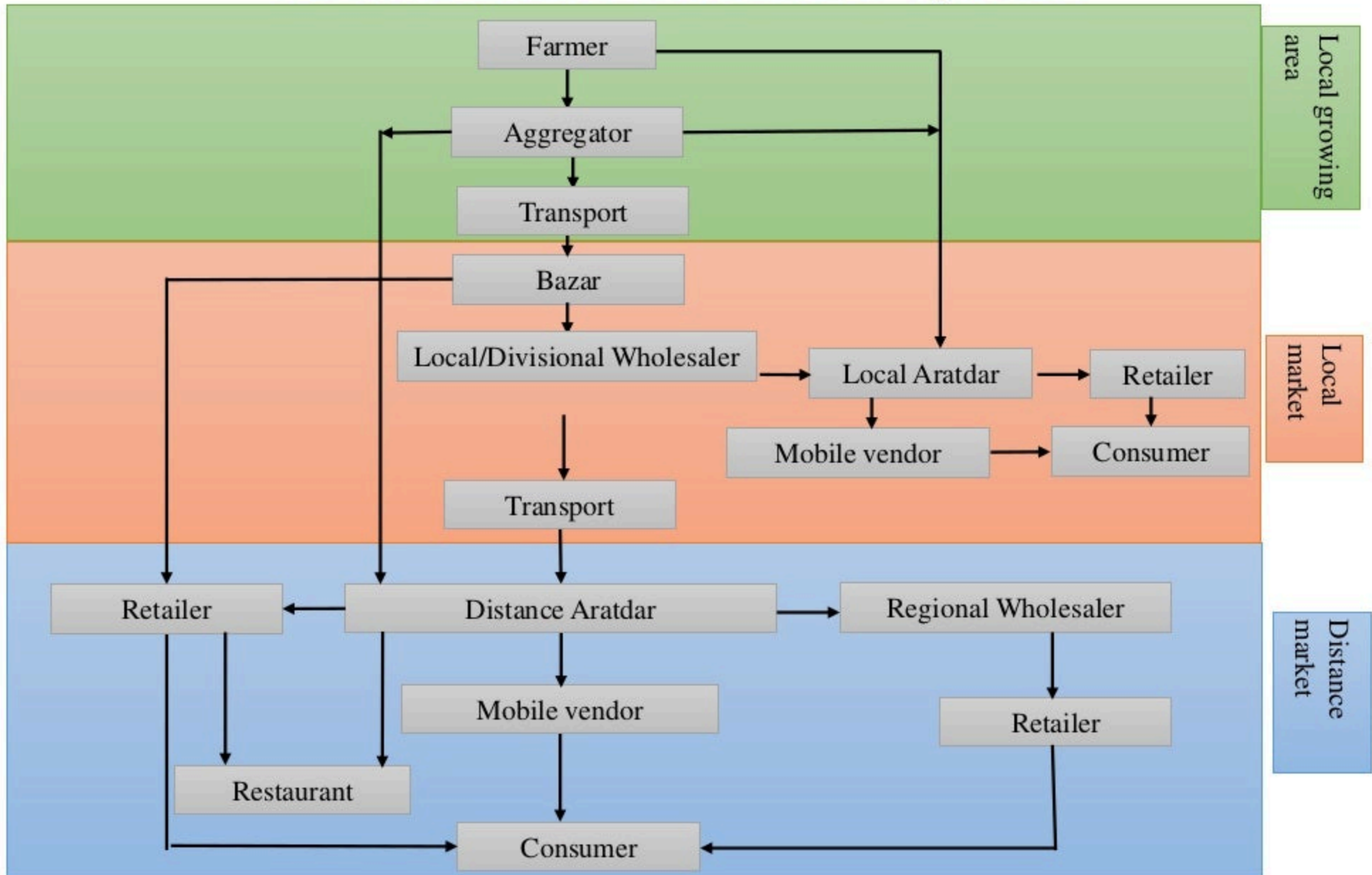
Bazar	Villages	Farm households
<b>Large Bazar (\$)</b>	1 Loop	30 Loop
		30 Non-Loop
	1 Non-Loop	30 Non-Loop
<b>Small Bazar (@)</b>	1 Loop	30 Loop
		30 Non-Loop
	1 Non-Loop	30 Non-Loop
<b>Mix (*)</b>	1 Loop	30 Loop
		30 Non-Loop
	1 Non-Loop	30 Non-Loop
<b>Total</b>	<b>6 (3 Loop, 3 Non-Loop)</b>	<b>270 (90 Loop, 180 Non-Loop)</b>

[[\\$](#)] a loop village supplying only to big market

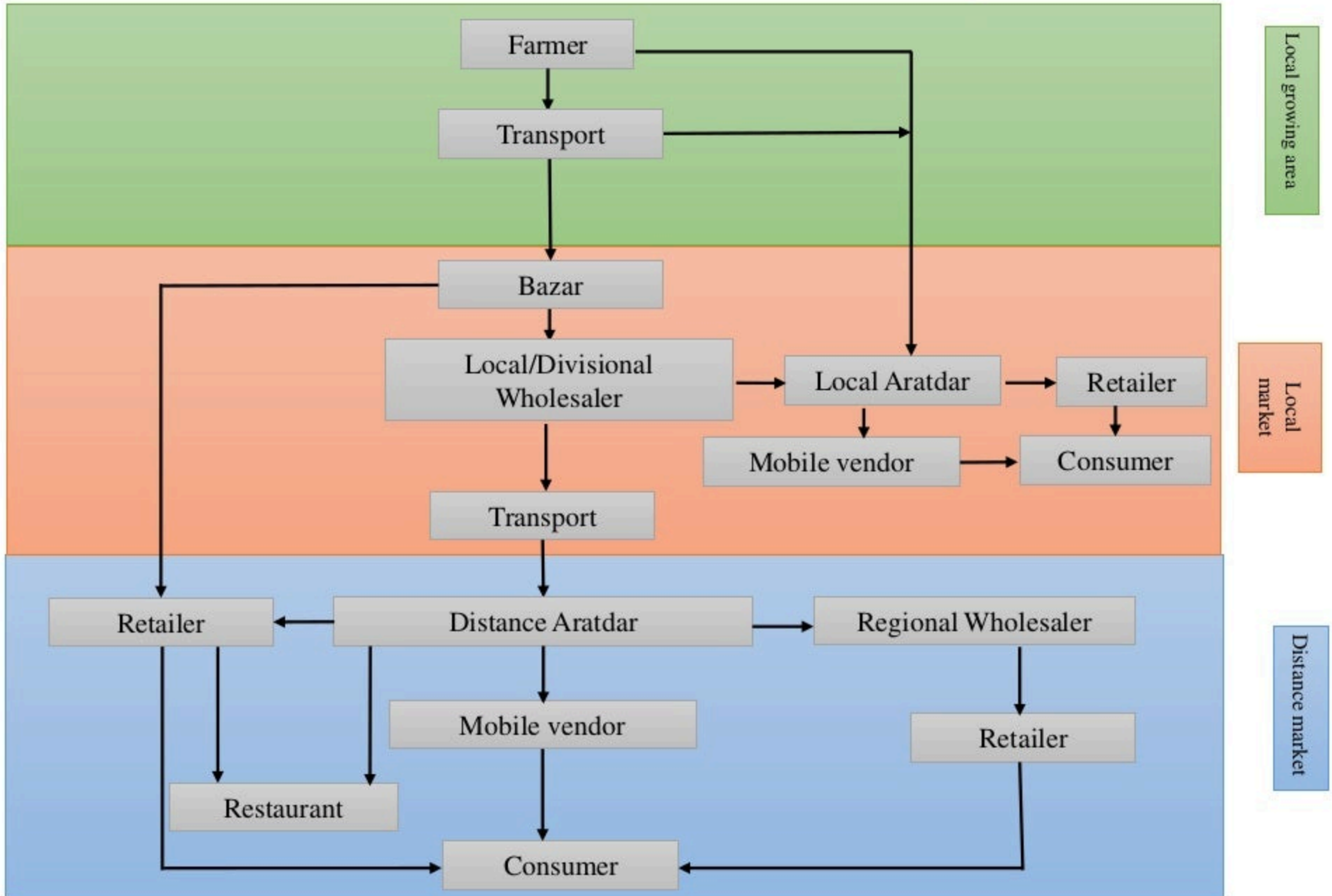
[[@](#)] a loop village supplying only to small market

[[\\*](#)] a loop village supplying to both small and large markets

# Value chain actors: LOOP system



# Value chain actors: Non-LOOP system



# RVCA results

- **Reduced transportation costs and better market access**

- Aggregation optimizes transportation costs by fully utilizing vehicle capacity. With more volume, it pays to sell at a market further away if the price is better.

- **Reduced opportunity costs**

- Usually both male and female farmers save 4-8 hours per market trip and invest this time to other family and farm activities.

- **Increased profits through increasing negotiation power**

- While individual sales are on a per farmer basis, by presenting aggregated volumes for sale, aggregators negotiate more competitive pricing and purchasing agreements, benefitting all of the participating for both male and female farmers regardless of individual volume.

- **Market information**

- Farmers have lacked the real-time, comparative pricing information to inform decisions about which market to take their vegetables to, on any given day. Transaction data on the Loop app provides a real-time view of market prices

# RVCA results

## ■ Unlock new market

-Aggregators use Loop's mobile application, SMS services and digital receipt to record all collection, cost and sales details on a comprehensive digital ledger, ensuring transparency and minimizing risk of fraud.

-LOOP aggregators transport F&V to 8 local and 5 distance markets for better price where individual farmers or even female farmers are not able to do the same.

## ■ Accountability

-Participating farmers can call a helpline to alert DG to any problems.

## ■ Nutritional improvement

- As production increases of vegetables, availability and affordability also increase, thus ensuring nutritional security.

# MINI: A-WEAI module

- **Module G2:** Role of Household Decision-Making Around Production and Income Generation

## **Activity B: Cash-crop farming**

G2.01 Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?

G2.02 When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?

G2.03 How much input did you have in making decisions about [ACTIVITY]?



# Additional Questions on Decision-Making

G2.04 To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?

G2.05 How much input did you have in decisions on the use of income generated from [ACTIVITY] ?

- What to sell?
- How much to sell?
- What to keep for home consumption?

# Food Security

- In the past four weeks, how many times did you or any household member have to eat a limited variety of foods due to a lack of resources?
- In the past four weeks, how many times was there no food to eat of any kind in your household because of lack of resources to get food?
- In the past four weeks, how many times did you or any household member go a whole day and night without eating anything because there was not enough food?

# Dietary Diversity

- Have the last 24 hours been part of a special day, like a celebration or feast day or a fast day where you ate special foods or more or less than usual or did not eat because of fasting?
- Now please take some time first to carefully think about everything that you ate during the last 24 hours, including breakfast, lunch, dinner, any snacks or tiffin, including meals eaten at home or away.

# Partners

- ✓ SOAS, University of London, UK
  - ✓ London School of Hygiene and Tropical Medicine
  - ✓ International Livestock Research Institute (ILRI)
  - ✓ Lincoln University, New Zealand
  - ✓ Bangladesh Agricultural University &
  - ✓ Digital Green Foundation, India
- 
- The research is being funded by Bill & Melina Gates Foundation & UKAid.
  - The initial presentation of material are those of the author(s) and project team. They do not necessarily reflect the views of B&M Gates Foundation and UKAid nor do they imply the expression of any opinion of B & M Gates Foundation and UKAid.