

# Transportation and Logistics in Latin American and Caribbean Food Banks

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**#FBLI2020**








Christopher Mejia Argueta • [cmejia@mit.edu](mailto:cmejia@mit.edu) "  
Founder and Director, *MIT Food and Retail Operations Lab*"

Oscar A. Tellez Sanchez • [oscar.tellez@nomad-opt.com](mailto:oscar.tellez@nomad-opt.com) "  
Postdoctoral researcher, *HEC Management School of Liège*"



Massachusetts Institute of Technology

# Agenda

-  1. Logistics and supply chain
-  2. Trends
-  3. Cost-benefit analysis + Q&A
-  4. Collaborative transportation + Q&A
-  5. Recommendations and conclusions



# FaROL

Food and Retail Operations Lab



**1** Design and implement effective, and flexible value-network strategies in *retail, e-tail*".



**3** Create innovative models of agri-food value networks with real social impact



**2** Analyze the evolution of the final consumer and forecast the future of the value network.



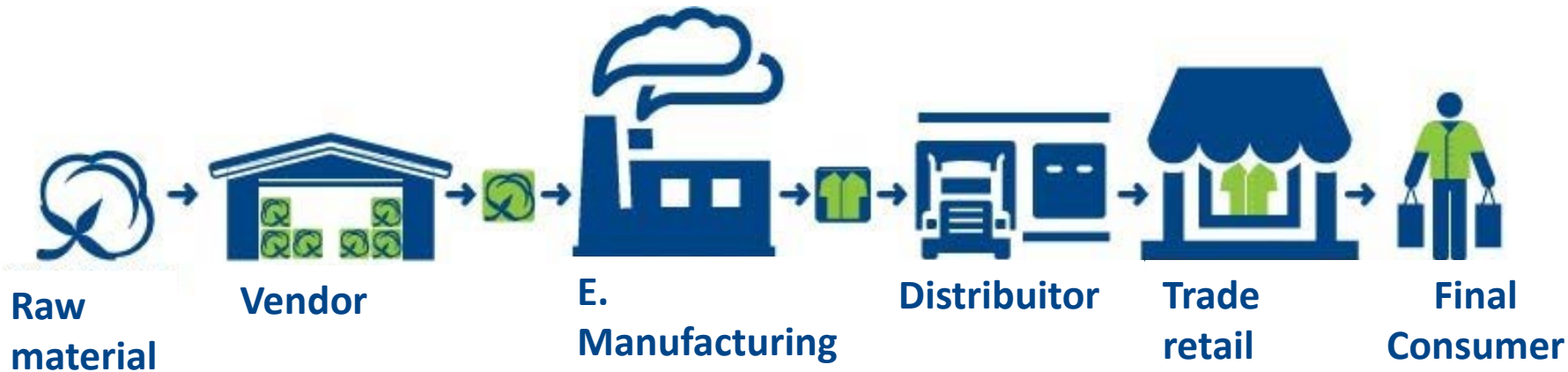


# 1. Logistics and supply chain



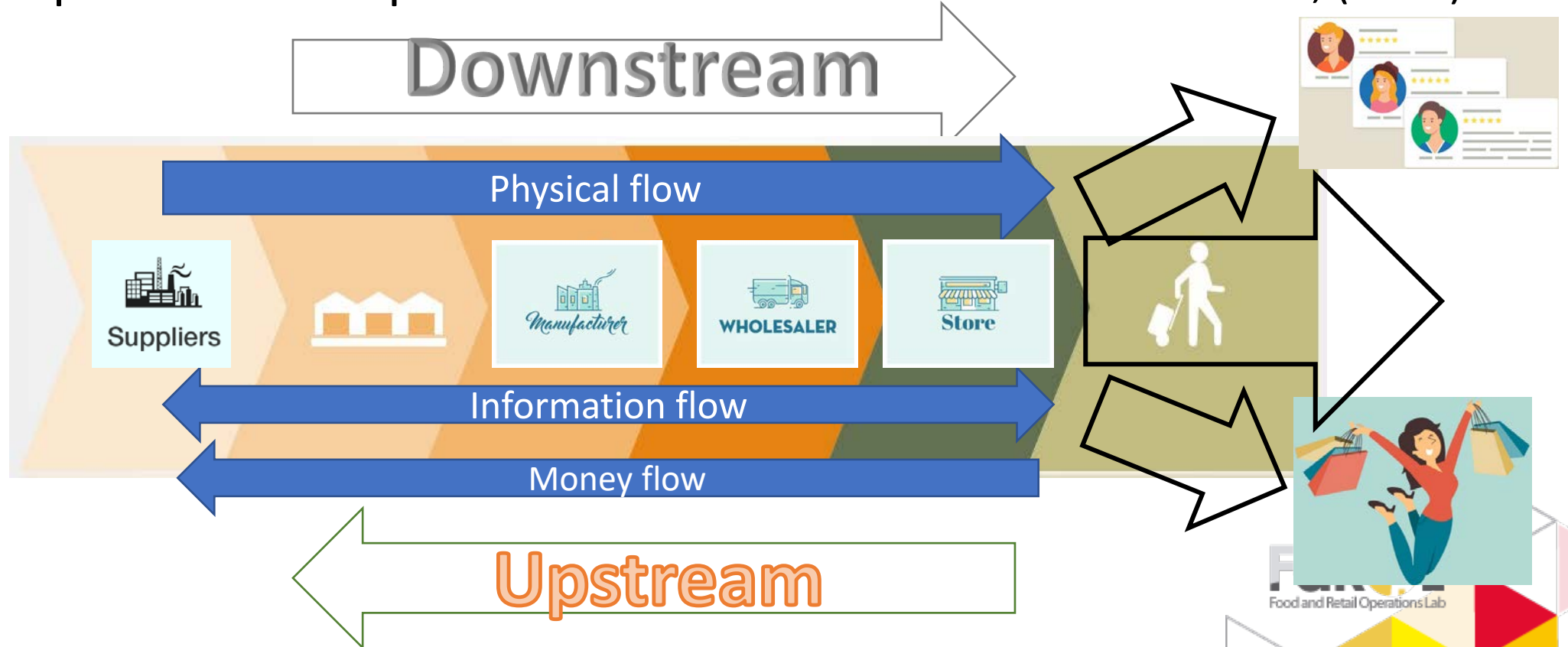
# Supply Chain Management/Value Network

"...**systemic, strategic coordination** of traditional and tactical operations **within an organization and between organizations** of the same supply chain, for the purpose of **improving long-term performance** of individual organizations and the supply chain as a whole." - Mentzer et al. (2001)



# Supply Chain Flow

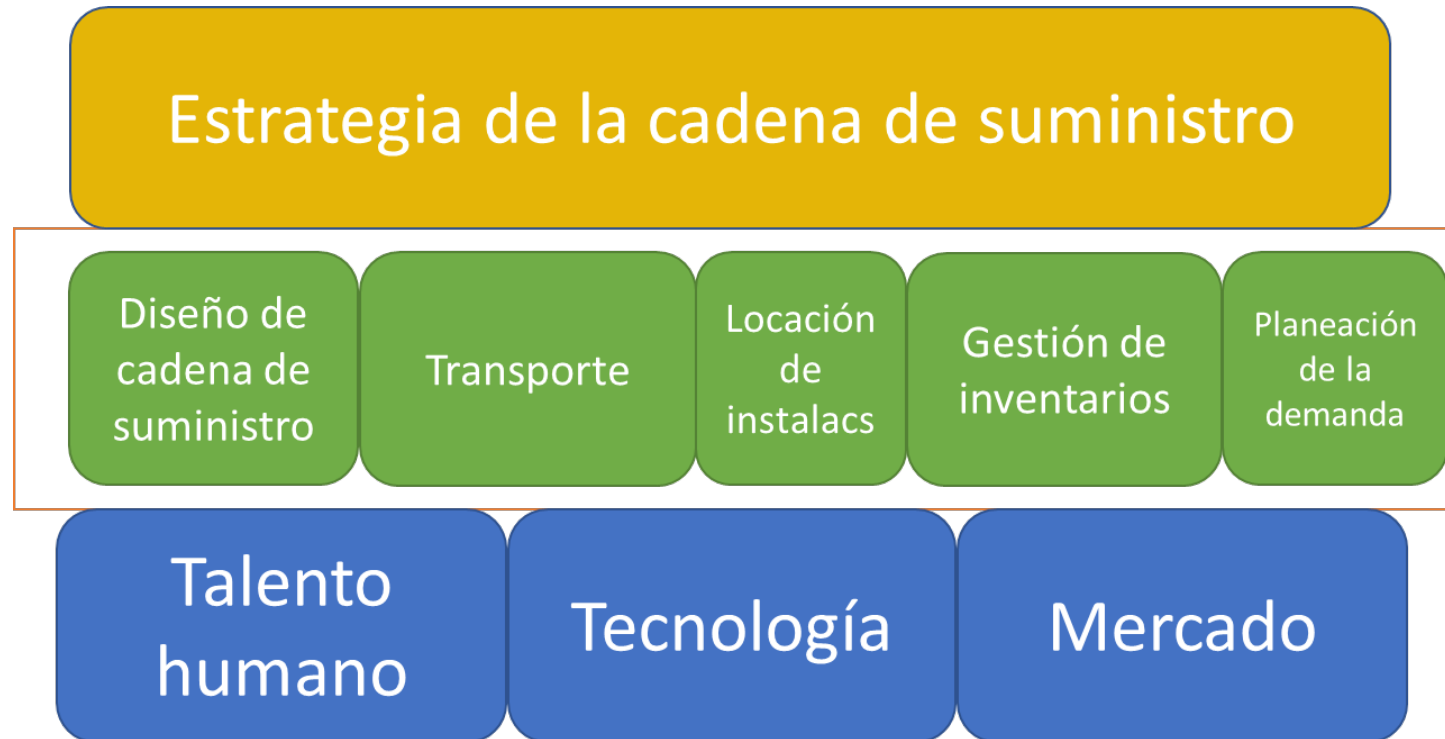
"... with the task of **integrating organizational units** along with the supply chain and **coordinating the flow of material, information and money** to **meet the demand of the final consumer** and improve the competitiveness of the entire chain. - Stadtler, (2008)





# So what is logistics?

- Logistics is **part of the supply chain**, involving **planning, implementing, and controlling the efficient flow and storage** of goods, services, and information from the point of origin to the point of consumption **in compliance with customer requirements**.



Adapted from Council of Logistics Management, (2001)



# Transportation of goods

Process of **physically moving** merchandise, goods and cargo from **origin to destination** by means of one or more vehicles







## Performance measures

- Serving Costs
- Use of vehicles
- **Product Availability**
- **Speed** and accuracy in deliveries
- Geographical coverage and **number of beneficiaries**
- **Waste, shrinkage and loss of product**
- Inventory rotation

“

Aquello que no se  
puede medir, no  
se puede mejorar.

PETER DRUCKER

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## 2. Trends

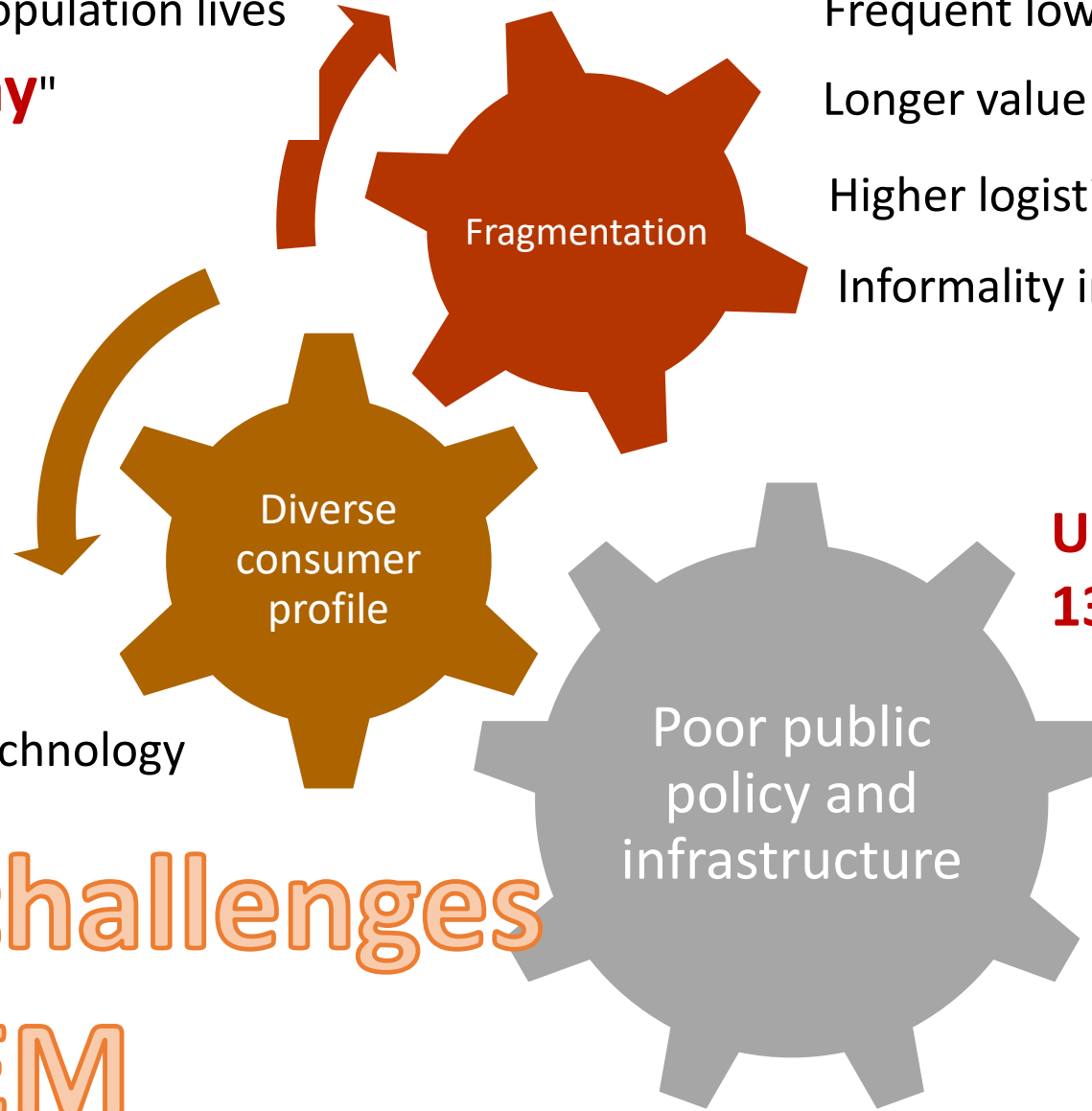




**71%** of the world's population lives on **<US\$10 per day**"

**What, why, how, when and where**

- < Purchasing power
- > Population density
- Growing access to technology



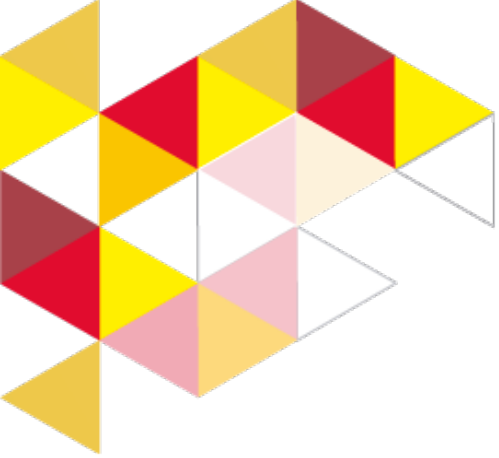
- Frequent low-volume deliveries - **Parcel!**".
- Longer value networks
- Higher logistics costs
- Informality in the field and in trade

**Urban Distribution** causes **13% of global congestion**

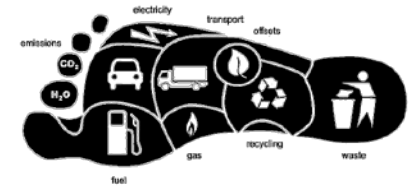
# Logistical challenges In EM

Source: Rivera, Mejia-Argueta & Amorocho-Daza, (2018)





# Food waste and decrease/loss



Waste per year

Food recovery

Environmental impact per capita



45m tons - 50%

15m – 26%

860 kg CO<sub>2</sub> - 6%



127m tons - 34%

36m – 85%

540 kg CO<sub>2</sub> - 17%



41m tons - 38%

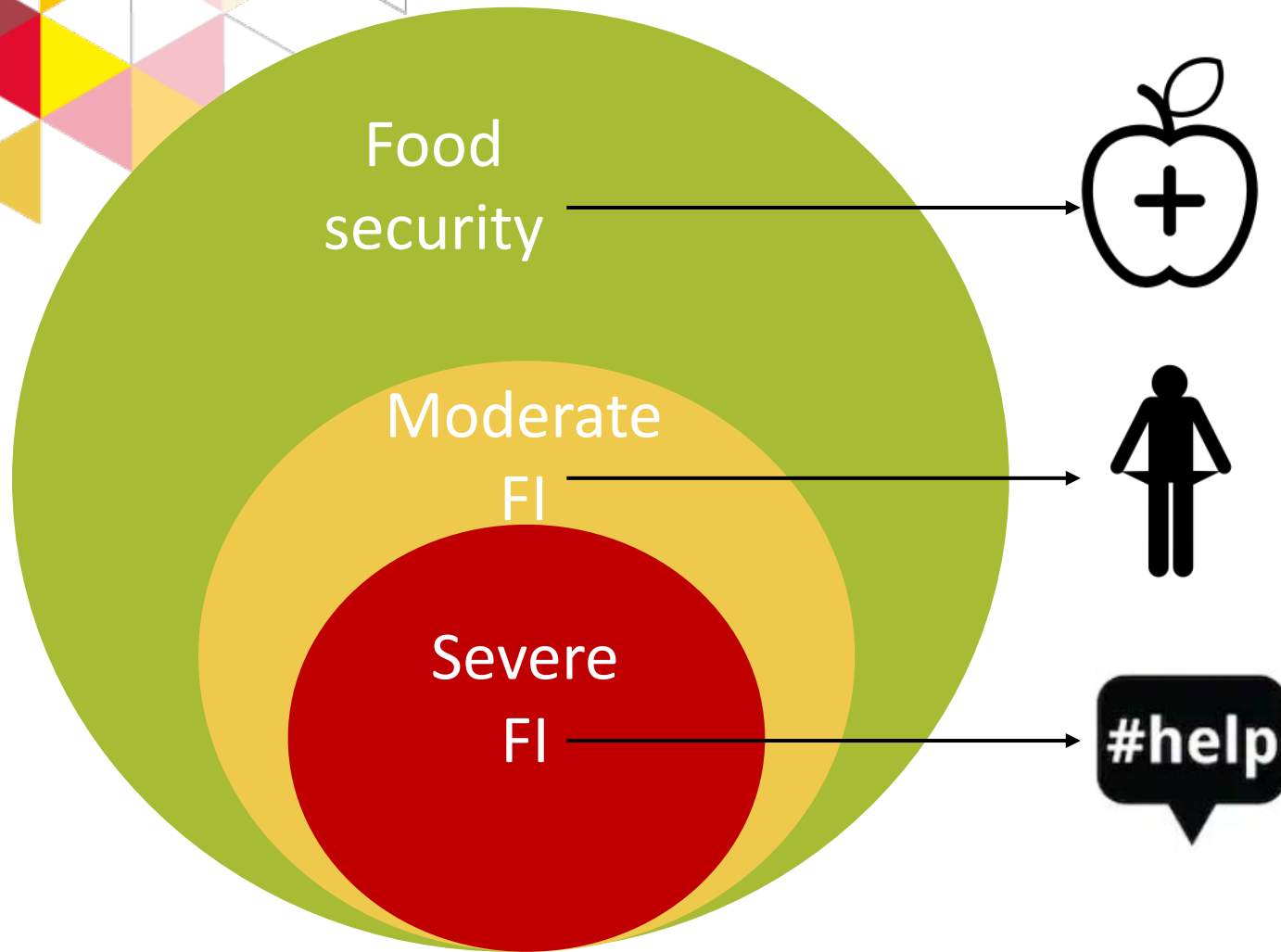
10m – 83%

570 kg CO<sub>2</sub> - 22%

Sources: Food Bank, (2006); Oxfam, (2011); FAO, (2012; 2016, 2018); USDA (2017)



# Food insecurity (FI)



5k m people  
(446m LAC)

US\$3.75/day  
**(US\$2.98/day LAC)**



1.25k m  
people  
(143m LAC)

US\$2.33/day  
**(US\$2.83/day LAC)**



746m people  
(62m LAC)

US\$0.79/day  
**(US\$1.06/day LAC)**

Source: FAO, (2020)







# 3. Cost-benefit analysis





# Excel spreadsheet description

## Fleet of vehicles

What type of vehicle is better?

Small vs medium vs large

Economic performance

## Buy or outsource

How many vehicles to have in 3 years?

Invest vs lease

Return on investment / return period

## Demand changes

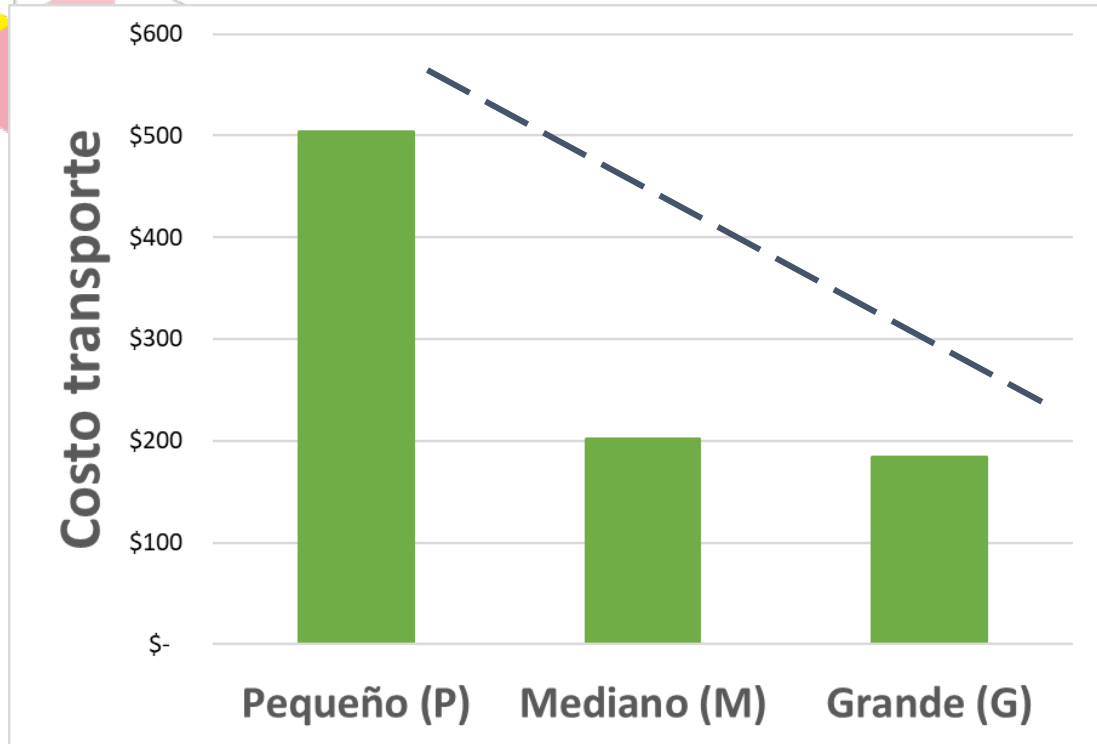
Would the decision change if demand changes?

Optimistic vs most likely vs pesimistic

Economic performance



# Trade-offs : Fleet of vehicles



+ Cost 3%  
+1 vehicle



**Benefit**

- ↑ Reactivity
- ↑ Flexibility
- ↓ Inventory/waste

# Trade-offs : Buy or Outsource?

**Buy**

+



- Flexible capacity
- Increased cash flow

- Greater control (Availability)
- Long-term investment

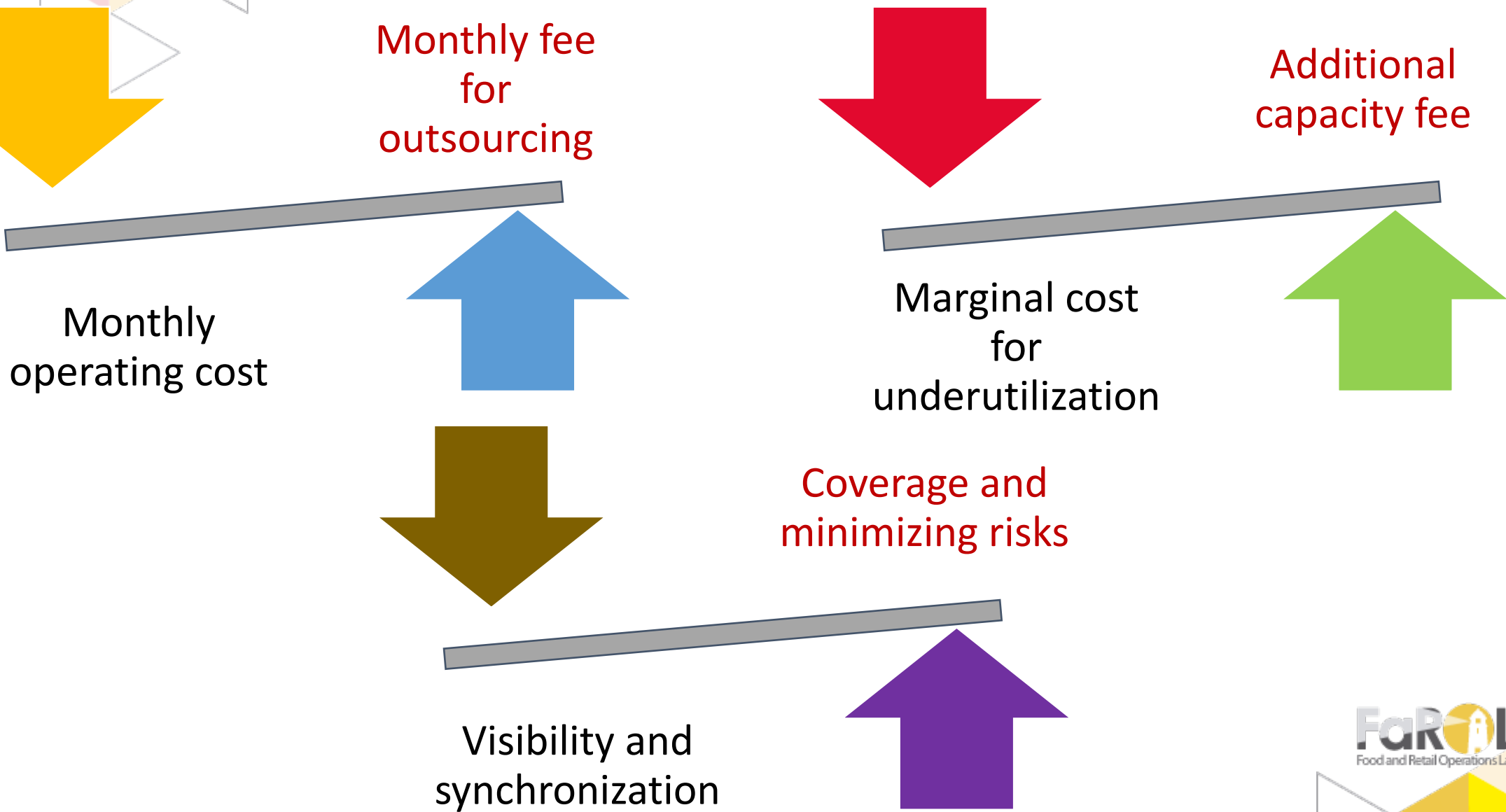
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**Outsource**

**FOROL**  
Food and Retail Operations Lab



# Other important *trade-offs*



# Main lessons

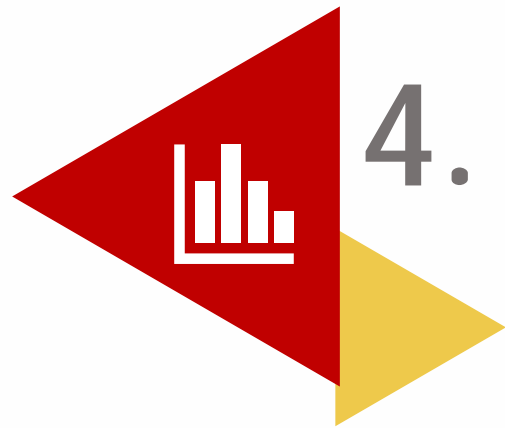


**There is no single formula** that works in all cases



Initially increase demand with own fleet and then do efficient outsourcing

Initially expand slowly to beneficiaries by outsourcing and then serve with own fleet to speed up the service



# 4. collaborative Transportation



# Collaborative logistics and transportation

## Vertical collaboration

External  
collaboration by  
**DONORS**

Internal  
collaboration of  
the **FOOD BANK**

External collaboration  
through  
**FOUNDATIONS AND  
OTHER FOOD BANKS**

External  
collaboration  
through **HUMAN  
DEVELOPMENT  
ORGANIZATIONS**

External  
collaboration  
through **OTHER  
ORGANIZATIONS**



## Horizontal collaboration

Adapted from Barrat (2004)





## Case description

- The Kinshasa food bank **lacks the budget to buy vehicles**; however, the **demand has increased by 50%** in the last two years and is expected to continue **growing at the same rate for the next five years**. Donations are guaranteed!
- Many of the **bank's donors (i.e., companies and large corporations)** have **vehicles that they only use at 40% capacity**, and their **distribution centers and warehouses are located in areas where the bank's beneficiary institutions operate**.
- Thus, certain human development institutions have spare capacity in their collection fleets, which can be used to serve other organizations.





## Rules and questions to be answered

- **Roles:** 1 Speaker, 2 writers, 3-4 "Controls", 1 timekeeper and teams of donors, food banks and beneficiaries.
- **5 minutes per question**
- If you have questions, **ask the moderator for support**
- When the 15 minutes of the activity are over, **return to the main room** (Leave breakout room)

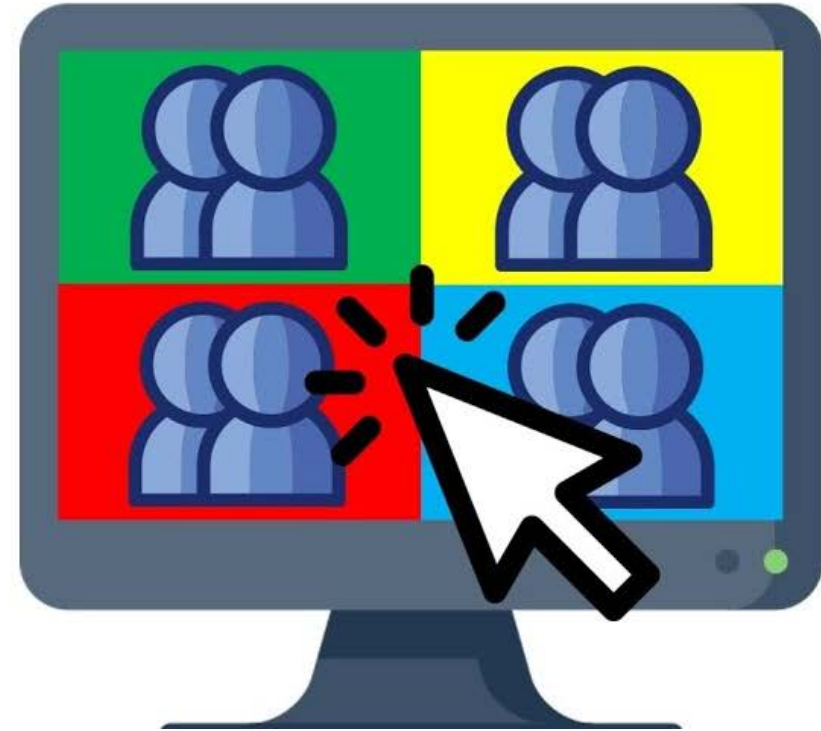
1. Who should manage the vehicles and who should program them?
2. How many vehicles should be purchased for joint operations and where should they be located?
3. How would you measure the performance of your collaborative transportation system?



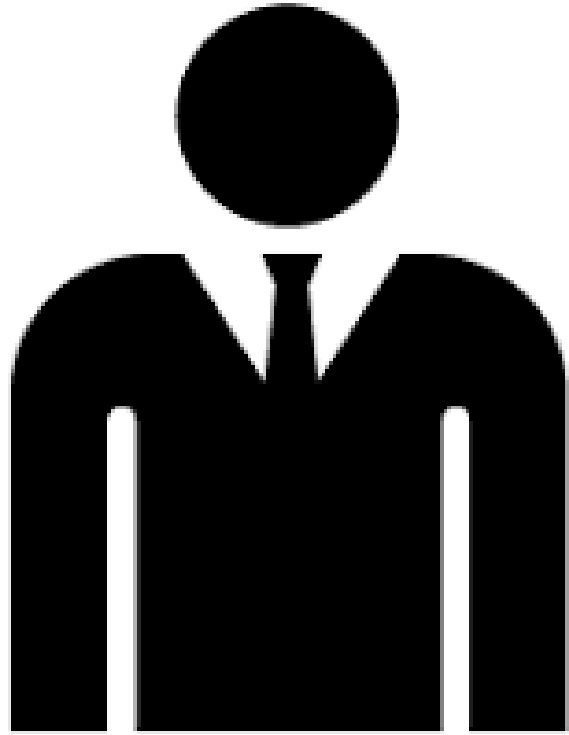


# zoom

## Breakout Rooms



# Sharing opinions

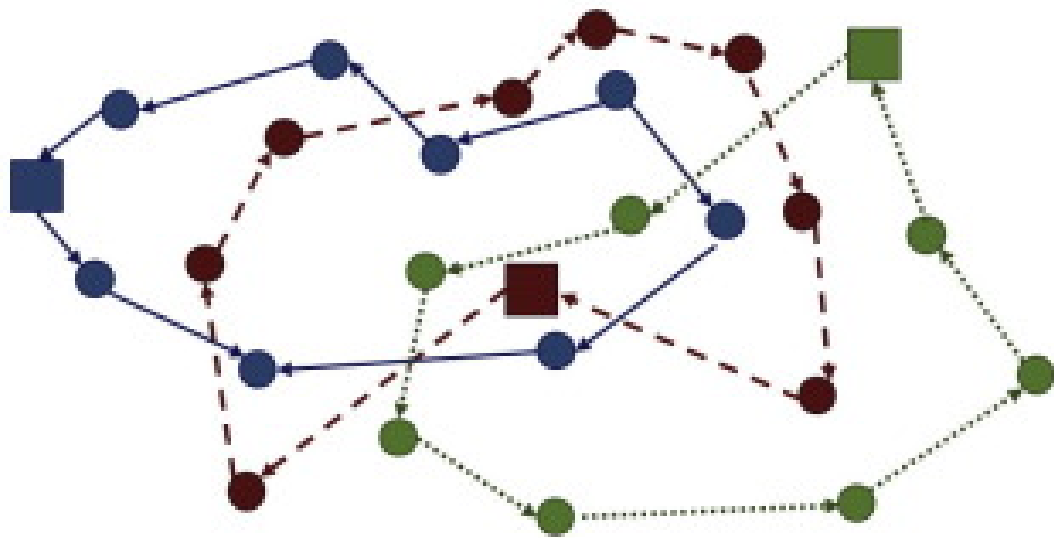




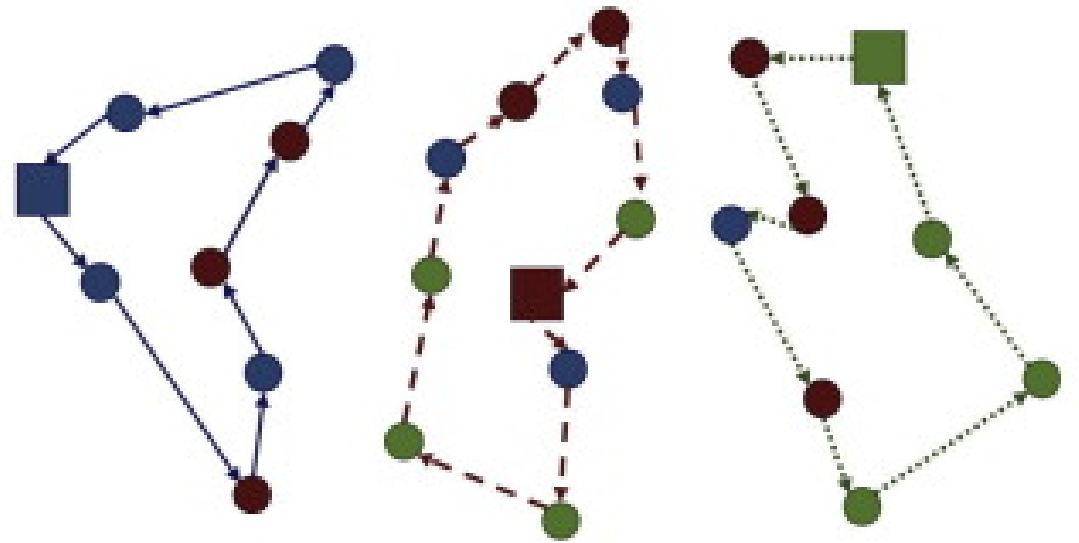
# Why is this important?

## Traditional distribution networks for 3 organizations

(SEPARATE)



## Collaborative inter-organizational distribution



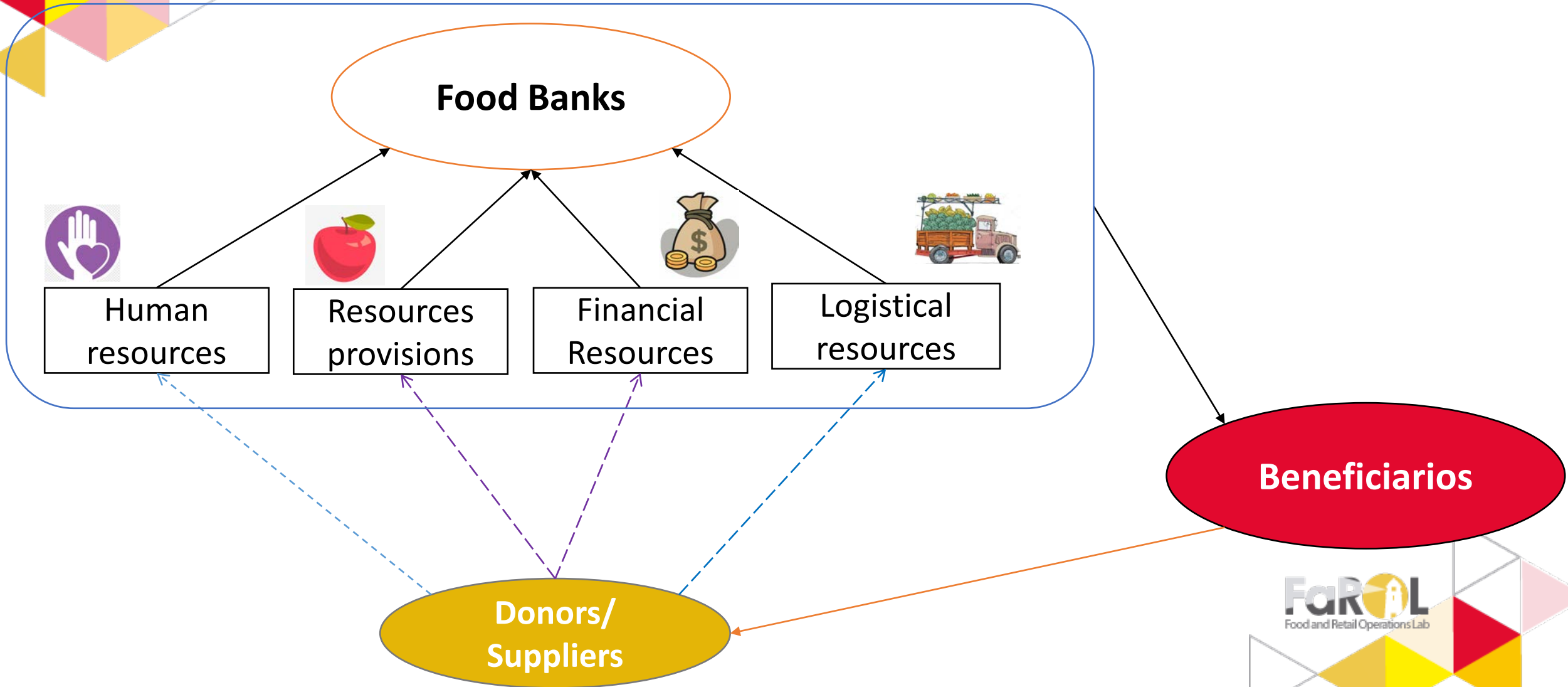
■ ● - - -> Depot, costumers and routes Firm 1

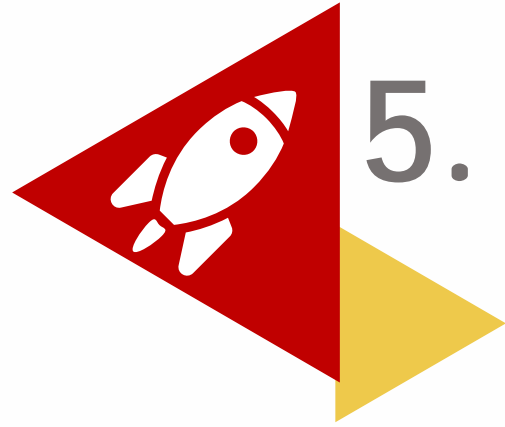
■ ● -> Depot, costumers and routes Firm 2

■ ● - -> Depot, costumers and routes Firm 3



# Collaborative logistics in food banks



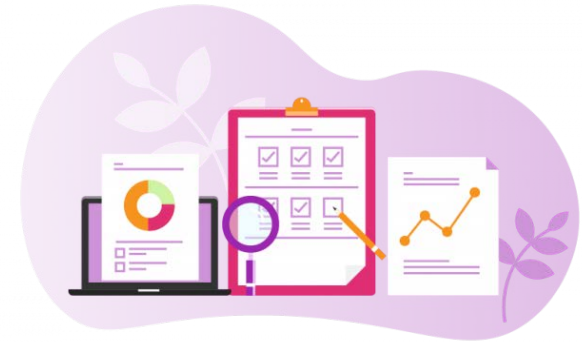


# 5. Recommendations and conclusions



# Workshop conclusions

- Combining alternatives provides advantages
- Reliable information and regular food collection protocols must be in place





## Workshop conclusions

- Create win-win strategies
- Establish long-term, lasting partnerships that define strategic, tactical and operational aspects
- Generate a development scheme in the collaborative environment

