

Digitizing; A Doorway to the Sustainable Meat Supply Chain in Iran

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Introduction

Deficiencies in the Red Meat Supply Chain

Economic problems

Political problems

Devaluation of the Rial

The US Sanctions

Red Meat Crisis:

- Increase in the price of red meat
- Shortage of red meat in the market

- A severe decline in household red meat consumption occurred in Iran in early 2019.
- The rapid price jump and low income levels forced many people to make fundamental changes in their diets, such as drastically reducing or even eliminating red meat.
- A 188% increase in meat imports and the distribution and selling of subsidised, imported frozen red meat by the state, which was cheaper than domestic meat, could not help to solve the crisis.
- In the red meat supply chain (RMSC) of Iran, brokers have strong forward and backward linkages. Brokers can increase the price of meat in each transaction to make a profit, which leads to unfair access to the market.
- Lack of systematic information gathering in the supply chain is one of the reasons brokers hold this power, as no database is available for recording transactions, the number of livestock on each farm, and the movement of livestock and meat from farm to fork.
- This allows brokers to dominate the market and reduces the bargaining power of the leading producers, while also inhibiting consumers' abilities to detect the quality and origins of the meat.

METHODOLOGY

Governance of Global Value Chain Approach:
Determine the distribution of profits and risks affected by corporate power

Transaction Cost Theory:
Determine the role of brokers and their opportunistic decisions

Case Study Method Identify the gaps in RMSC digital maturity

Case Study

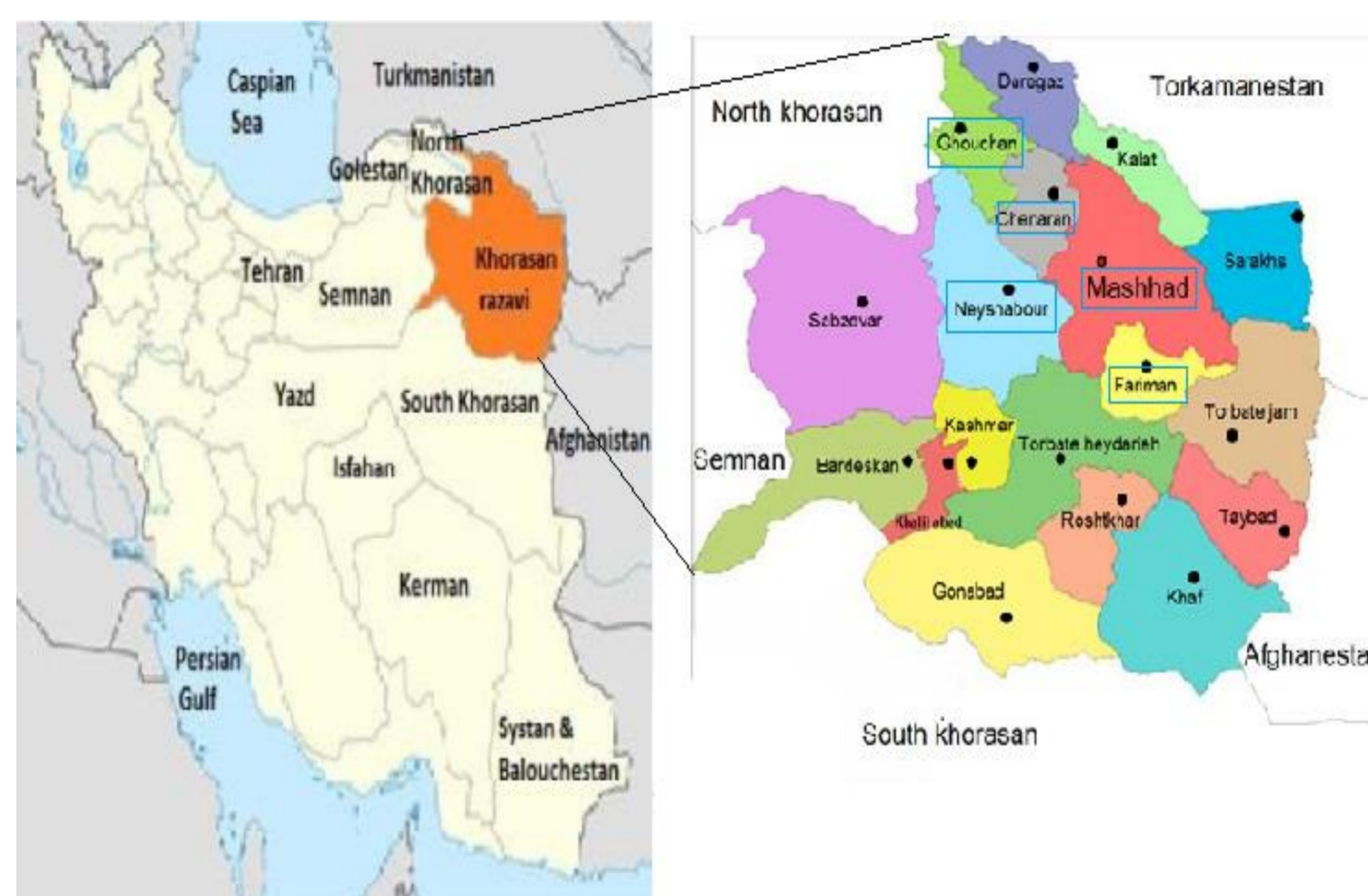


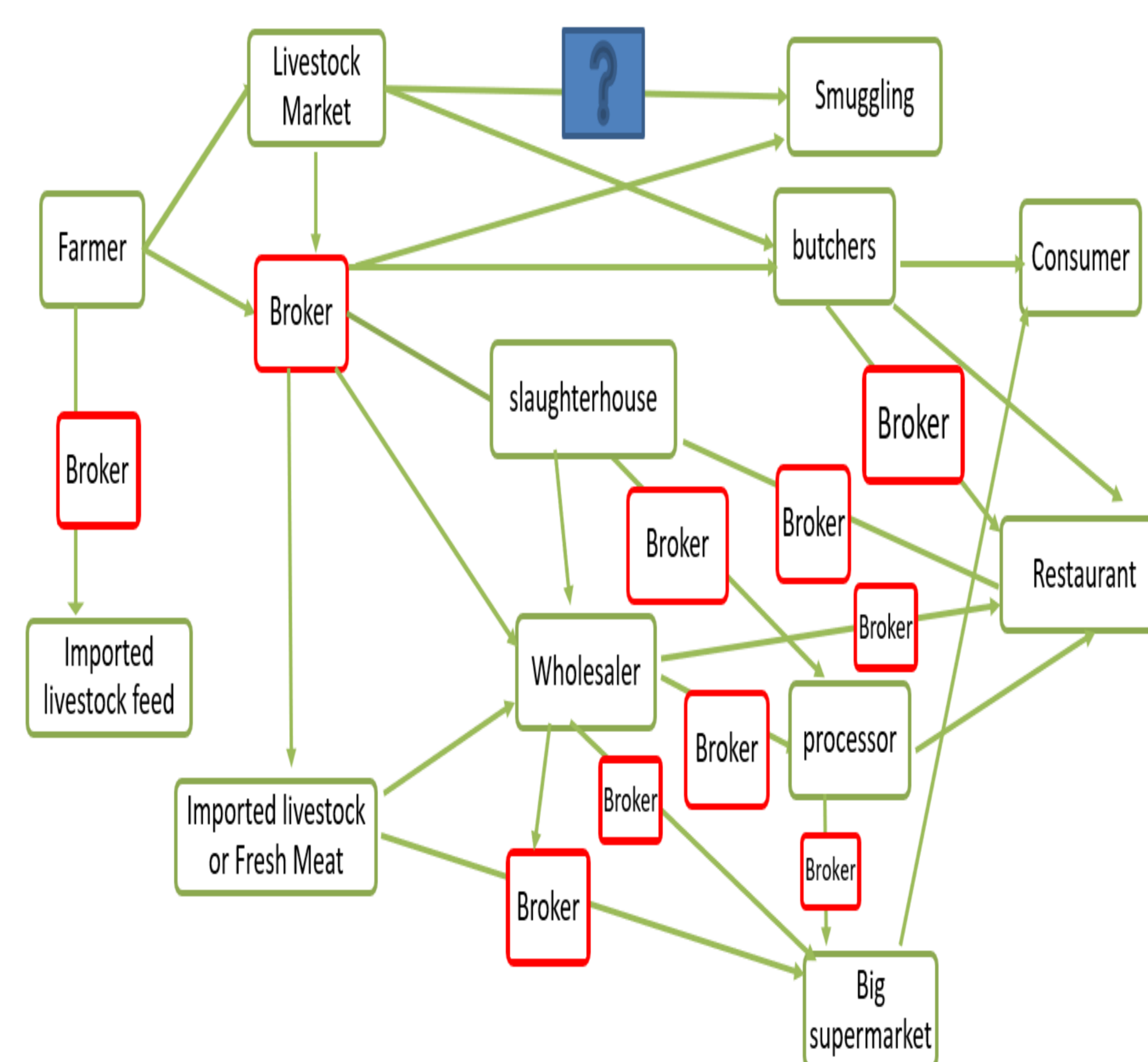
Figure 1. Study area

Criteria of study area selection:

Five cities with the highest level of red meat production in eastern province of Khorasan Razavi:

- An essential supplier of red meat with the highest production over the period 2016-2018
- A high rate of distribution of subsidised imported frozen red meat since the beginning of 2019
- 450 km border with Afghanistan, which is currently in a crisis of food security

Results



Broker as a Buyer → Captive Governance

Broker as a Supplier → Captive, Relational or Modular Governance

Figure 2. Governance Structure of Iran's RMSC



Figure 3. Some sectors in RMSC of Iran

Digital Technology

Tracking of livestock

Up-to-date records of origin

Radio Frequency Identification (RFID)

Sales of breeding animals

Livestock health issues

Power Concentration

Abuses of Buyer Power

Problems in the Structure of RMSC in Iran

Unfair Trading Practices

Reduce Trust Between Sectors

Block chain as a decentralized, online ledger aims to facilitate peer-to-peer transactions and ease traceability by securely storing information. Any information relevant to the livestock, meat and transactions can be verified and accessed at any time. It assures transparency to consumers and provide trust and data transparency for all meat supply chain parties so it provides a Full-trusted end-to-end traceability for all meat supply chain parties.

Conclusions

Implementing blockchain technology along with RFID will:

- Increase food safety
- Create a transparent marketplace which enables faster decision making
- Increase fair competition and earnings for smaller producers
- Improve livestock living conditions
- Provide smart contracts to remove the need for trusted intermediaries to verify transactions

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