

Farmer-Owned Enterprises (BUMP) as an Adoption of Short Food Supply Chains in Urban Areas

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Abstract. Long food supply chains pose a challenge to the food system in urban areas. The adoption of short food supply chains (SFSC) by Farmer-Owned Enterprises (BUMP) in Semarang City provides a viable alternative solution, although gaps in understanding remain. This study aims to analyze the institutional development, role implementation, and sustainability plans of BUMP in the food supply chain. Using a qualitative approach with in-depth interviews, observations, and documentation from 11 informants—including BUMP directors, government agencies, and partners—data were analyzed using the Miles and Huberman model with triangulation validation. The results show that BUMP LSS is a farmer economic institution transformed from a farmer institution that plays a role in providing affordable food for consumers by shortening the food supply chain. Strengthening price stability and controlling inflation is carried out by BUMP LSS through synergy programs such as Pak Rahman, Lumpangsemar, Kios Pandawa Kita, and Kempling Semar. However, challenges in BUMP's SFCS implementation are sluggish traditional market players and farmer regeneration. The conclusion of this study is that BUMP is able to adopt SFSC, thus impacting the sustainability of the food system. Suggestions for further research compare urban, suburban, and rural BUMPs on SFSC adoption capabilities.

1 Introduction

The food system consists of several subsystems, including agricultural systems, input supply systems and waste management systems which interact with other main systems. The global food system needs to be shaped to realize the SDGs to be more productive and inclusive of poor and marginalized communities [1]. In its implementation, the food system needs to consider the context of rapid population growth, especially in urban areas, and the growth of wealth and consumption patterns [2]. The food system conceptually has three fundamental elements including consumer behavior, the environment, and the food supply chain [3].

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The agrifood supply chain is linked to economic development and social functions of society both horizontally and vertically. At the horizontal level, the government develops strategies to build local facilities and economies by encouraging agricultural producers to enter the agrifood supply chain. At the vertical level, the participation of producers has the potential to increase farmers' incomes due to higher product value through supply chain improvements, which in turn addresses social issues in economic development [4].

The global food supply chain has a detrimental impact on social inequality and rural poverty [5] and disrupt local food traditions [6]. Short food supply chains offer an alternative approach to food distribution. Creating closer relationships between food producers and consumers by eliminating intermediaries can facilitate greater transparency and stimulate local economic growth [7]. Urban areas form short supply chains and bring food producers closer to consumers more directly [8].

Semarang City is the center of economic activity in Central Java, relying on the services and trade sectors. Because it is an urban area, agricultural land in Semarang City is limited. The total rice harvested area in Semarang City in 2023 was 2.77 thousand hectares, with rice production of approximately 15.92 thousand tons of dry milled grain (GKG), equivalent to 9.16 thousand tons of rice. This is estimated to only meet 11% of the community's rice needs [9].

The key to Semarang's success lies in implementing a short food supply chain by encouraging BUMPs to strengthen the food ecosystem. BUMP acts as an intermediary between producers and consumers through the implementation of a short, three-link supply chain. Initial surveys indicate that BUMP contributed to the distribution of 300 tons of rice to control food inflation between 2023 and 2024. As a result, Semarang City, as an urban area, has been able to reduce food inflation, particularly rice inflation, from 22% to 6.7%. An innovative program run by the Semarang City government to maintain price stability while improving community welfare. In implementing the food system, the Semarang City government involves BUMP as producers to carry out urban food distribution.

Farmer-Owned Enterprises (BUMP) are a breakthrough in farmer economic institutions, adopting a hybrid concept of business and empowerment. While BUMPs are profit-oriented, their activities also emphasize empowerment [10]. BUMP owned by farmers is an institutional transformation that can collaborate with various parties such as in Semarang City. Indirectly, BUMPs become a central institution in the sustainability of short-term food supply chains.

However, the adoption of food supply chains by BUMPs in urban areas has not been studied in depth, either in terms of institutional development, role implementation, or the resulting sustainable impacts. There is still a gap in understanding regarding the challenges of BUMP adapting to urban market dynamics, their position in the food system, and the differences between urban and peri-urban areas. Therefore, this study aims to analyze the institutional development, role implementation, and sustainability plans of BUMP in the food supply chain.

2 Methodology

The research was conducted in Semarang City, Indonesia from April to July 2025. The total number of informants was 11 people, namely 3 people from the BUMP board of directors, 1 BUMP employee, 2 people from the farmer group representing internal parties. Informants also came from 1 person from BUMP partners, 1 person from the Semarang City Food Security Agency, 1 person from the Semarang City Regional Development Planning Agency, 1 person from the Central Java Provincial Food Security Agency, 1 person from the Central Java Bank Indonesia Representative Office as external parties. Data collection was carried

out through in-depth interviews, observations, field notes, and documentation validation. In-depth interviews lasted 37 to 65 minutes.

A qualitative approach is used in food supply chain research to gain in-depth and comprehensive understanding. The research is aimed at collecting data, extracting meaning, and gaining insight into the case [11]. The selection of informants is based on needs, position, and understanding, both intentionally and through snowball sampling. The Miles and Huberman [12] model was used to analyze the collected data. Source triangulation and method triangulation were used further to validate the data.

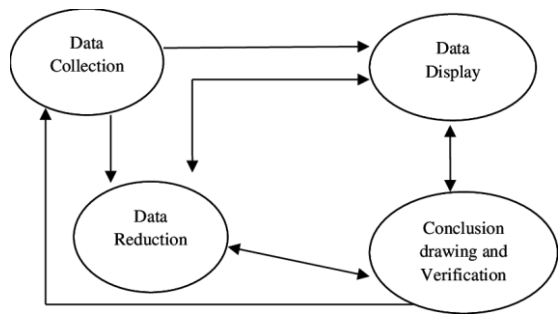


Fig. 1. Miles and Huberman Model

3 Results and discussion

3.1 Transformation of BUMP and Institutional Development Program

3.1.1 Transformation of BUMP

Farmer-Owned Enterprises (BUMP) are referred to as farmer economic institutions which are a transformation of farmer institutions such as farmer groups (poktan) and farmer group associations (gapoktan). BUMP is a farmer's economic institution that is a business entity and has legal status. Limited Liability Companies (PT) and cooperatives are legal entities that farmers can choose after careful consideration according to their needs. The legal basis for the formation and assistance of BUMP is stated in Law Number 19 of 2013 concerning the Protection and Empowerment of Farmers [10].

In Semarang City, there is a BUMP PT. Lumpang Semar Sejahtera (BUMP LSS) which was established at the end of 2022. Lumpang Semar Sejahtera means Lumbung Pangan Kota Semarang Sejahtera, which means becoming a food station in Semarang City while providing welfare for its members. The establishment of BUMP LSS is inseparable from six farmer institutions in the form of farmer groups (poktan) that collectively share a shared commitment to increasing farmer income. The success of the establishment of BUMP LSS cannot be separated from the assistance provided by the National Secretariat of Indonesian Farmer-Owned Enterprises (Seknas BUMP-Indonesia).

There are two main objectives for establishing BUMP LSS, namely to provide welfare for its members and to provide easy access to food for the people of Semarang City. The founders of BUMP LSS have a background as heads of farmer groups and independent agricultural extension workers representing their group members collectively agreeing on this goal. The social capital is owned by the founders of BUMP who have been working together since 2015 to 2022 with the initiation of the Self-Help Agricultural Extension Institution (PPS), the Self-Help Agricultural and Rural Training Center (P4S), the Semarang

City Organic Agricultural Extension Community to the establishment of the CV business entity. As in the following statement.

"It started with farmer groups in each of the Mijen, Ngaliyan, Tugu, and Gunungpati regions in 2015, facilitated by the government. Eventually, we initiated how to develop organic agricultural products. Then, the embryo of an organic agricultural consultant or extension community emerged. After that, it continued to grow as a carrier of the virus of goodness for farmers. However, due to limitations in terms of distribution permits and capital, the product could only be enjoyed by us for us. It was on this basis that the BUMP initiative was formed so that it could continue to grow." (Mr. AKS, Operations Director)

The transformation from farmer institutions to farmer economic institutions in the form of Farmer Owned Enterprises (BUMP) demonstrates a bottom-up social process. Like BUMP LSS, the transformation has taken place over several years. Based on the results obtained, Table 1 presents the transformation, reviewed from several factors.

Table 1. Institutional Transformation of BUMP LSS

Transformed Factor	Pre-Existing Condition (2015-2022)	Condition After Transformation (2022-now)
Ultimate Goals	Productive activities, education for farmers, and having own products	Increasing farmers' income and providing food access to the community
Institutional Form	Farmer institutions in the form of farmer groups and independent agricultural extension communities	Farmer economic institutions in the form of Farmer-Owned Enterprises (BUMP)
Activity Orientation	Social upstream agriculture	Downstream agricultural economy
Organizational Structure	The organization's activities are voluntary	Tasks and work according to ability, even though we still help each other
Product Focus	Derivatives of rice commodities and machine products	Product diversification according to consumer needs
Use of Technology	Agricultural tools and 4achines to facilitate production and increase product value	Agricultural tools and machines with digitalization support product efficiency and effectiveness.
Institutional Financial Resources	Cash collected through individual farmers	Capital comes from banking, partnerships, and institutional profits
Government Support	Agriculture Service of Semarang City	Multistakeholder
Position in the food supply chain	The main actor or farmer	Food producers
Collective Power	Social	Social, finansial and partnership

3.1.2 Institutional Development Program

Since its establishment in 2023, BUMP LSS has consistently realized its institutional goals by actively participating in activities initiated by the Semarang City Government and the Central Java Provincial Government. This involvement is demonstrated by BUMP LSS's active participation in the "Pak Rahman" low-cost food bazaar throughout 2023-2024 at 283 locations with a total rice sales quantity of 219,800 kg. In addition, BUMP LSS is an offtaker

to distribute food needs at every point of the Semarang City Food Barn "Lumpangsemar" which is located in 177 urban village, 16 districts, and 19 food market "Kios Pangan" spread across Semarang City.

These two programs are the government's efforts to bring producers closer to consumers. BUMP LSS has consistently been involved as an operator in government programs due to its leadership's commitment to continuously providing food to the community. As demonstrated by the following stakeholder statement.

"Existing programs like food market 'Kios Pangan', Lumpangsemar, and the most recent, Kempling semar, still involve BUMP as an offtaker. The goal is food security and inflation control. BUMP's existence is incredibly beneficial and we will never abandon it. A crucial factor is the commitment of BUMP leaders themselves. Semarang, as a city, is not a manufacturing area." (Mrs. SHM, Food Security Agency of Semarang City)

On the other hand, BUMP LSS operates a food station called "Kios Pandawa Kita" located in the center of the traditional market in Semarang City as a showcase for food prices, especially rice, in controlling inflation. The existence of Kios Pandawa Kita is able to present products directly from farmers at producer prices, thus becoming a reference for business actors around traditional markets. Due to the success of Semarang City in controlling inflation, it has replicated the existence of inflation control market in all districts/cities in Central Java.

"The need to mitigate rising food commodity prices, particularly rice, led to the establishment of an Inflation Control Shop at Kanjengan Market. The shop is operated by a BUMP that consistently sells to consumers below market prices. This success prompted the provincial government to issue a circular to regencies/cities to replicate the program." (Mr. GWC, Bank Indonesia Representative Office of Central Java Province)

Table 2. BUMP LSS Involvement in SFSC

ACTORS/ PARTNERS	SFSC PROGRAMS			
	Pak Rahman	Lumpangsemar	Kios Pandawa Kita	Kempling Semar
BUMP LSS	V	V	V	V
BUMN BULOG	V	V	-	V
BUMN RNI	V		-	V
BUMD JTAB	V	V	-	V
BUMD BPS	V	-	-	V
PRIMA FRESMART	V	-	-	-
CV. INDOGUNA	V	-	-	-
CV. SANDI BUANA	V	-	-	-
CV. FERTINDO	V	-	-	-
ANDI BAWANG	V	-	-	-
SAYUR YUNI	V	-	-	-
BERKAH TELUR	V	-	-	-
KIOS SEJAHTERA 21	-	V	V	V
KIOS PANGAN BU ONYOT	V	-	-	V

3.2 Adoption of BUMP in Urban Food Supply Chains

3.2.1 Urban Food Supply Chains and the Role of BUMP

Urban areas tend to be dependent on other areas for their food needs, especially rice. The rice marketing distribution chain has various channels. Rice marketing actors or the distribution chain consist of several actors, namely farmers, grain collectors, rice mills, wholesalers, retailers in traditional markets, retailers in stalls, and end consumers. The number of institutions in supply chain activities can affect costs in the supply chain channel [13].

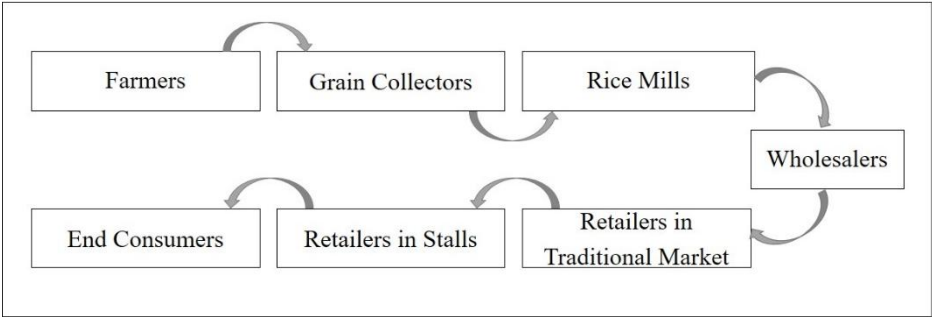


Fig. 2. Urban Rice Supply Chain

Semarang City as an urban area has a fairly large need for food, especially rice. As an urban area, Semarang City has a focus on transforming from food security to a food system so that handling food issues is more sustainable and inclusive. The government also formed a Regional Inflation Control Team (TPID) consisting of multiple stakeholders. BUMP LSS has a role as an operator and offtaker in operating the program to shorten the food supply chain.

"Honestly, the food system is expensive from an ecological, biodiversity, and biodiversity perspective. How can this food system be affordable, accessible, and accessible to all parties? In recent years, food has become a major concern for all parties. To control inflation, there's something called the Regional Inflation Control Team (TPID). This requires a multi-stakeholder role. The supply chain, which originally had six links, has now been reduced to three with BUMP. BUMP's role is perfectly suited to the distribution side. It acts as an offtaker, bringing producers closer to consumers." (Mrs. DJK, Regional Development Planning Agency of Semarang City)

Social innovation in Semarang City through sustainable short-chain food supply chains can transform the food system and create a better "food landscape". The food supply chain in Semarang City exhibits significant complexity, with farmers as key actors in a system involving diverse groups, including Farmer-Owned Enterprises (BUMP). Farmers through these institutions play a crucial role in the food supply chain in Semarang City [14].

In providing affordable food, BUMP LSS targets the lower-middle class. BUMP's products are supervised by the city government, particularly regarding quality, packaging, and licensing. There are 6 food products that are sales commodities in the food supply chain, including rice, cooking oil, shallots, garlic, chicken eggs, and granulated sugar. In the process, BUMP LSS received distribution facilities in accordance with Semarang Mayoral Regulation Number 77 of 2022, with the aim of shortening the distribution chain of staple goods from producers to consumers, among other things.

"BUMP was formed because of the hope that farmers would get optimal results, smooth marketing, and affordable prices. BUMP LSS is closely linked to the food system. We

have already implemented activities in partnership with the city government, particularly the food security department. Since early 2022, inflation control has been intensively pursued. The BUMP plays a strategic role and is well-connected to food security. BUMP is always prepared for Semarang's food needs." (Mr. SHJ, Finance Director)

3.2.2 Adoption of BUMP in Short Food Supply Chains

Short food supply Chain (SFSC) are seen as a form of vertical integration where producers minimize transaction costs by internalizing processing, distribution, and retail sales that would otherwise be carried out by third parties. Regular adoption of SFSC makes producers more knowledgeable and informed and closer to consumers. This proximity makes for faster transactions at lower prices than large supply chains. The adoption of SFSC in farmer organizations has the potential to transform towards a fairer, healthier, and more sustainable food system [15].

The approach taken by BUMP LSS in providing affordable food for the community through upstream and downstream activities. Upstream, BUMP LSS purchases agricultural products from members and partners at negotiated prices above middlemen's prices. The price difference offered ranges from Rp 200 to Rp 500 per kg, depending on the quality of the purchased material. From the downstream side, BUMP LSS markets processed products and derivative products at a maximum price of the Highest Retail Price (HET) set by the government. BUMP LSS markets products directly to consumers, thus creating an SFSC ecosystem.

"BUMP's clear role is to provide affordable food for the lower-middle class. Essentially, we are contributing to Semarang's role as a consumer city with its food system. So, yes, BUMP is necessary to provide that. We absorb farmers' unhusked rice from the upstream, manage it, and then directly distribute it to consumers. We buy from farmers above the middleman's price, and we sell to consumers below the market price." (Mr. YMZ, President Director)

Table 3. Comparison of FSC with SFSC conducted by BUMP LSS

Item	Actors in the Food Supply Chain	Distribution Facilitation	Volume
Rice FSC in General	Farmers » grain collectors » rice mill » wholesalers » retailers in traditional market » retailers in stalls » end consumers	No	Anytime
BUMP in Pak Rahman	Farmers » BUMP » end consumers	Yes, sustainable	By events
BUMP in Lumpangsemar	Farmers » BUMP » LS sub-district/ urban village/ and food market » end consumers	Yes, sustainable	Once a month
BUMP LSS in Kios Pandawa Kita	Farmers » BUMP » end consumers	Yes, sometimes	Anytime
BUMP LSS in Kempling Semar	Farmers » BUMP » end consumers	No	Monday-Friday

Table 3 shows a comparison of the general FSC system with that implemented by BUMP. The food supply chain, which originally consisted of seven actors, has been expanded to three to four actors by BUMP LSS through a program in collaboration with the city government. This proves that the role of BUMP LSS as an institution is capable of realizing SFSC. The participation of Pak Rahman's program, Kios Pandawa Kita, and Kempling Semar embodies

3 actors, meaning that BUMP only acts as a facilitator or producer between farmers and end consumers. Meanwhile, in the Lumpangsemar program, BUMP LSS distributes food supplies to sub-districts, villages, and food kiosks called LS, then continues to end consumers.

The SFSC implemented by BUMP LSS has a different objective, affecting distribution facilities and volume. Pak Rahman's program aims to intervene in market prices when they spike. The Lumpangsemar program is carried out only once a month jointly through the collaboration of LS partners spread throughout the city of Semarang. Kios Pandawa Kita as a reference for market prices in Semarang City as an extension of the government aims to control prices for traditional market business actors. And the Kempling Semar program aims to bring food closer to and reach the community, especially in areas vulnerable to poverty.

3.3 Challenges of Urban Short Food Supply Chains

3.3.1 Stakeholder Partnership

BUMP LSS's participation in various food system programs is considered a contribution that needs to be appreciated by the government. The adoption of BUMP LSS towards SFSC has successfully provided significant impacts and influences in the food system including (1) bringing food closer from producers to consumers; (2) stabilizing food prices when prices soar; (3) continuous supply of food needs; (4) conveying opinions in urban food policy forums; (5) reducing regional inflation, especially food; and (6) pilot instruments for increasing the institutional capacity of farmers. Its dynamic and strategic position is able to provide a positive impact on institutional development.

“BUMP has grown very quickly since joining Pak Rahman. Until now, we still have a cooperation agreement with us. Encouraged cooperation agreements with other regions. Promote with Bank Indonesia and be given many facilities. Bank Jateng also supports the facilities. The existence of BUMP is very useful. It is known everywhere for its ability to control inflation.” (Mrs. SHM, Food Security Agency of Semarang City)

Table 4. Government Facility Support to BUMP LSS

Government	Facility Support
Food Security Agency of Central Java	Facilitation of formation, support farmer economic institutional extension worker, managerial training, and marketing
Food Security Agency of Semarang City	Provision of distribution facilities, involvement in food system programs, facilitation of inter-regional cooperation
Bank Indonesia Representative Office of Central Java Province	Facilitation of agricultural tools and machinery, facilitation of food distribution vehicles, facilitation of agricultural digitalization, facilitation of capacity building
Agricultural Service of Semarang City	Agricultural machinery facilitation, demonstration plot cooperation

BUMP LSS's efforts to encourage sustainable food supply are carried out through B to B collaboration with food barn areas in Central Java. The focus of choosing Central Java, apart from accessibility, is due to the BUMP's goal of maintaining supply stability so that it does not leave the region. In the cooperation agreement document held by BUMP LSS, since 2023 it has entered into 15 partnerships with farmer groups (poktan), farmer group associations (gapoktan), Farmer-Owned Enterprises (BUMP), and Regionally-Owned Enterprises (BUMD). Some of the areas that have collaborated include Semarang City, Kendal Regency, Demak, Semarang, Grobogan, Jepara, Rembang, Klaten, Karanganyar, Sukoharjo, and Cilacap.

"The BUMP LSS has undertaken numerous partnerships on a business-to-business basis. Procurement is required to prioritize local production. As mandated by law, the government is obligated to establish and support BUMPs. Diversifying BUMP LSS products can enhance their role." (Mrs. HNA, Food Security Agency of Central Java)

3.3.2 Challenges of Urban Short Food Supply Chains

To ensure the sustainability of SFSC, a multi-level plan is required and mitigation of potential threats is necessary. BUMP LSS as a farmer economic institution whose administrators and members are mostly elderly (40-60 years old) needs cadre development to answer the challenges of an increasingly complex and digital era. The values of mutual cooperation that have been implemented so far need to be strengthened further with transparency and commitment in building the organization. The incubation of young farmers in Semarang City can be directed to synergize to form operational collaborations so as to strengthen institutional capacity, instead of forming the same institutions again.

"Our strength in mutual cooperation still exists. First, we are trusted because we have complete legal standing. We must maintain the trust of our partners and stakeholders as best we can. Regeneration is the primary guideline for BUMP's future operations. Like it or not, it must be implemented because the current management is aging. The more modern we are, the greater the demands." (Mr. YMZ, President Director)

The implementation of SFSC in Semarang City has had a positive impact on the government, especially in controlling food prices and ensuring food security for vulnerable communities. On the other hand, this has negatively impacted traditional markets, which are increasingly seeing fewer customers. The short supply chain connecting producers with consumers also impacts small businesses in the area, impacting sales slumps. People flock to buy cheap and affordable food without regard for their surroundings. This phenomenon can create new poverty at the grassroots level.

"We're still discussing how we can meet our own needs with a SFSC. That's where BUMP's role lies. At the very least, it cuts out the middlemen. We're also developing local producers. The dilemma is, imports are coming in, and something is thriving there, even though we want to create a SFSC. It turns out it's also harmful to the environment. Grocery stores, small market, and even markets are starting to become deserted due to the massive SFSC." (Mrs. DJK, Regional Development Planning Agency of Semarang City)

Semarang City's mobile food security (Kempling Semar) or Pak Rahman reborn is an SFSC innovation in Semarang City which is expected to be able to meet the shortcomings of the previous inflation control program. Without distribution facilitation, operators can increase their competitive advantage, including improving human resources. The BUMP LSS's strength is geared up to support Kempling Semar, along with other strategic partners, in the more extensive implementation of the SFSC. BUMP LSS's network, track record, and agricultural equipment and machinery facilities are continuously strengthened through mentoring.

4 Conclusion

This research demonstrates the effective adoption of short food supply chains (SFSC) in urban areas by Farmer-Owned Enterprises (BUMP) as an institutional innovation for farmers. The institutional transformation of farmer groups into farmer economic institutions in the form of BUMPs in Semarang City enabled direct market participation. BUMP LSS

successfully adopted SFSC by shortening the distribution chain from six to three actors, ensuring affordable food prices for urban consumers and increasing farmer incomes. Its role as an offtaker in government programs such as Pak Rahman, Lumpangsemar, Kios Pandawa Kita, and Kempling Semar underscores its strategic importance in stabilizing food prices and controlling inflation.

Sustaining the successful adoption of SFCS by BUMP LSS presents challenges, particularly in light of farmer regeneration, strengthening the value of mutual cooperation, and involving traditional market actors in mitigating consumer sluggishness. This research recommends multi-level sustainability planning to strengthen institutional transparency, engage young farmers, and enhance the role of BUMPs in the urban food system. Suggestions for further research can compare the understanding of adaptability and socio-economic impacts between BUMPs in urban, suburban, and rural areas.

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