



## Implementation of Supply Chain Management in Supporting Vegetable Stock in Polewali Mandar Central

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### ABSTRACT

*Vegetables are plants or parts of plants that are commonly consumed by Indonesian people as staple foods, appetite enhancers, or appetite stimulants. This study aims to understand and describe the implementation of supply chain management in vegetable traders at Pekkabata Polewali Mandar Central Market. This study uses a qualitative approach with a case study method. The results of the study indicate that the implementation of supply chain management in Pekkabata Central Market has been running well. Good cooperation between traders and local farmers and distributors allows for the availability of stable and quality vegetables. Effective stock management also helps reduce the risk of loss due to damage or decreased quality of vegetables. Vegetable traders at Pekkabata Central Market also carry out strict supervision of vegetable quality and have the hope of having a comfortable and cool place to sell to maintain the quality of the vegetables sold. This study recommends improving communication and coordination between traders, farmers, and distributors, developing better information systems, and increasing awareness of the importance of vegetable quality for consumer health. The local government can also consider improving market facilities to improve the quality of vegetables sold.*

**Keywords:** *Implementation of Supply Chain Management, Vegetable Inventory, Polewali Mandar Central Market*

### INTRODUCTION

Horticultural plants have a strategic position in the Indonesian economy due to their great potential and high economic value. Horticultural plants are also highly needed by society in a sustainable manner. Horticultural commodities in Indonesia can be divided into four major groups, namely fruit plants, vegetable plants, biopharmaceutical plants, and ornamental plants (Wahyudi, 2020). Vegetables are plants or parts of plants that are commonly consumed by Indonesian people as staple foods, appetite enhancers, or appetite stimulants. Vegetables have varying expiration dates after being harvested. One of the weaknesses of vegetables is that they tend to wilt and rot after being harvested. This is indicated by physical changes that occur in the vegetables, resulting in a decrease in their quality. Therefore, further post-harvest processing is needed to extend the shelf life of vegetables (Anggraeni et al., 2021).

Technological advancements and the increasing demand for high-quality fresh leafy vegetables have led companies to compete with each other to improve their competitiveness, particularly in terms of product quality. One factor that must be considered in order to improve the competitiveness of fresh leafy vegetables and maintain quality is the distribution factor. Product distribution to consumers must be effective and timely. To date, decision-making regarding the distribution channels of vegetable products to consumers is still determined subjectively based on the courier's experience, which can result in reduced efficiency of the distribution process. Therefore, innovation is needed in managing distribution channels so that this process can run more efficiently and effectively in meeting consumer needs (Supriatna, 2022).

Vegetables are a general term for plant-based foods that typically have high water content, which can be consumed after being cooked or processed with certain techniques, or in a fresh state. The very high demand for vegetables is driven by public awareness of the need to fulfill nutritional needs derived from plants. On the other hand, the increase in consumption has problems in the marketing of commercial vegetables because it is suspected that high prices are not enjoyed by farmers, fluctuating vegetable prices, and consumers still have difficulty in meeting their needs, so it can be indicated that the commercial vegetable supply chain at the Polewali Mandar City Central Market has not been running well because many commercial vegetables are left over and thrown away. Because vegetables are products that are easily damaged and rotten both mechanically and physiologically. Therefore, it is necessary to improve the supply chain in its implementation so that the marketing of commercial vegetables is more optimal.

Vegetable production in West Sulawesi includes Shallots (1,076 tons), Garlic (8 tons), Leeks (231 tons), Potatoes (30 tons), Cabbage (7 tons), Mustard Greens (919 tons), Carrots (2 tons), Long Beans (2,725 tons), Large Chilies (4,025 tons), Cayenne Peppers (3,710 tons), Tomatoes (2,609 tons), Eggplants (2,300 tons), Green Beans (14 tons), Cucumbers (2,130 tons), Chayote (201 tons), Water Spinach (1,988 tons), Spinach (1,865 tons), Petai (12 tons), and Jengkol (3 tons) (BPS Indonesia, 2023).

According to BPS West Sulawesi (2024), in the table above, vegetable production in Polewali Mandar Regency includes several types of vegetable plants, such as Leeks (64.00 kw), Shallots (257.00 kw), Spinach (324.00 kw), Cayenne Peppers (1,207.00 kw), Long Beans (809.00 kw), Water Spinach (546.00 kw), Cucumbers (231.00 kw), Chayote (237.00 kw), Mustard Greens (147.00 kw), Eggplants (715.50 kw), Tomatoes (1,123.00 kw), Large Chilies (1,240.00 kw), and Curly Chilies (704.00 kw).

According to Dharmawati et al. (2020), a supply chain is a process from raw materials to final products, where materials move from the original supplier to the hands of consumers by connecting all suppliers. The vegetable supply chain system connects levels from upstream to downstream, including the movement of goods, information, and finance. The supply chain system described in this study covers the upstream sector from farmers to consumers for the production of leafy vegetables (such as caixim, cabbage, kale, leeks, bok choy, lettuce, and celery). For the process, fruit vegetables (such as chili, eggplant, cucumber, tomato, pumpkin, and green bitter melon), legumes (such as red beans and long beans), flower vegetables (such as broccoli and cauliflower), and root vegetables (such as carrots, potatoes, shallots, and garlic).

Supply chain management is a system that includes the processes of production, delivery, storage, distribution, and sales of products to meet product demand. The supply chain encompasses all processes and activities that deliver products to consumers (Jaya et al., 2021). According to Jaya et al. (2021), supply chain management is an integrated system for managing the flow of goods, information, and finances from producers to end consumers. Supply chain management includes several important aspects, such as the network of collaborating companies, the flow of goods and information, and the processes of design, planning, production, inventory, transportation, retail, and waste management. With effective supply chain management, companies can increase efficiency, reduce costs, and improve customer satisfaction through coordinated and integrated management throughout the supply chain. This study aims to understand and describe the implementation of supply chain management in vegetable traders at Pekkabata Polewali Mandar Central Market

## RESEARCH METHODS

### Research Design

This study used a qualitative approach with a case study method. The qualitative approach was chosen because it aims to understand and describe in depth the application of supply chain management to vegetable traders at Polewali Mandar Central Market. The case study method was chosen to focus on one particular case, namely the application of supply chain management to several vegetable traders in the market.

Haryono, (2023) defines qualitative research as research that produces descriptive data in the form of written or spoken words from people and observable behavior. Qualitative research methods are research methods used to understand social phenomena in depth and detail. There are many types of qualitative research, including the following: phenomenology, ethnography, case studies, grounded theory, etc. Research on various qualitative research includes case study approaches, phenomenological approach researchers, and researchers with an ethnographic communication approach. The case study research method is a type of research that can answer several issues or objects of a phenomenon, especially in the social sciences. For example. In the branch of sociology, case research is used as a qualitative research design to evaluate events or situations in the real world (real situation) (Assyakurrohim et al, 2023).

## Research Site

This research will be conducted at the Central Market, Polewali District, Polewali Mandar Regency from March to May 2025.

## Types of Data

This type of research is qualitative research with two data sources, namely primary and secondary data. According to Hidayah (2023), Primary data sources are data obtained directly from research subjects as sources of information sought. The primary data source in this study is data obtained from vegetable traders at the Polewali Mandar central market. While secondary data according to Hidayah (2023). Secondary data sources are data sources that cannot provide direct information to data collectors. The secondary data source is data obtained through other parties, not directly obtained by researchers from their research subjects. In other words, secondary data is supporting data from the main data or primary data. Secondary data from this study was taken from various sources such as books, articles, and others.

## Data Collection Method

The data collection process in this study involves observation, questionnaires, and documentation. Observation is conducted directly at Polewali Mandar Central Market to understand the procurement, storage, and distribution processes of vegetables. The activities of vegetable traders, farmers, and retailers are observed to understand their roles and responsibilities in the supply chain. Data is recorded on market conditions, including the number of traders, types of vegetables sold, and sales volume.

A questionnaire is prepared containing questions about respondent profiles, vegetable procurement processes, storage and distribution, supply chain management, and problems faced in the supply chain. The questionnaire is distributed to vegetable traders, farmers, and retailers at Polewali Mandar Central Market. The collected data is analyzed to understand respondents' perceptions and experiences with supply chain management. Relevant documents, such as vegetable sales data, reports on market conditions and vegetable supply chain, and vegetable procurement documents from farmers, are collected and analyzed to understand patterns and trends in the vegetable supply chain. The documentation data is used to validate the results of observation and questionnaires.

## Population and Sampling Technique

The population in this study consists of all 24 vegetable traders at Pekkabata Polewali Main Market. This study uses a saturated sampling method, where the entire population of 24 people is used as the research sample. With this method, all members of the population are involved in the research, so the results can provide a more accurate and comprehensive picture of the population's characteristics. The saturated sampling method is particularly useful when the population size is relatively small and allows for more in-depth and representative analysis.

To determine the sample, the researcher establishes the following respondent criteria:

- 1) Vegetable traders: Traders who sell vegetables at Polewali Mandar Central Market, whether wholesalers or retailers.
- 2) Vegetable farmers: Farmers who produce vegetables and sell them to Polewali Mandar Central Market or to other traders.
- 3) Vegetable retailers: Retailers who buy vegetables from wholesalers or farmers and sell them to end consumers. Criteria:
  - Aged at least 18 years old
  - Have worked as a vegetable trader, farmer, or retailer for at least 1 year
  - Have knowledge and experience in vegetable supply chain management
  - Willing to participate in the research and provide accurate information.

By determining clear respondent criteria, this research can obtain relevant and accurate data on the application of supply chain management in supporting vegetable supplies at Polewali Mandar Central Market. According to Suriani & Jailani (2023) saturated sampling is a sampling technique, when all members of the population are used as samples. This is often done when the population is relatively small, less than 30 people. Another term for a saturated sample is a census, where all members of the population are sampled.

## Data analysis

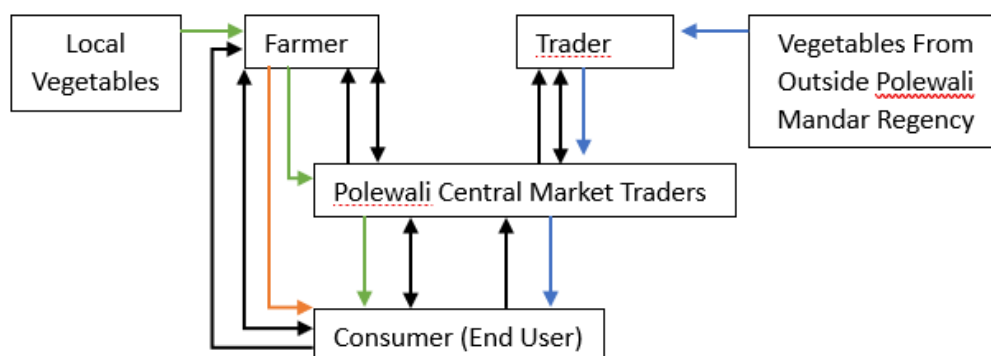
According to Miles and Huberman Puspita (2025), Data analysis in qualitative research is carried out when data collection is taking place and after data collection is completed within a certain period. In addition, data

analysis also allows researchers to make valid conclusions based on information found from the data that has been collected. Data analysis is carried out interactively and continuously until the data obtained is saturated. The data analysis process in qualitative research is divided into several stages that must be carried out carefully. The first stage is data reduction, where the collected data is simplified without losing its original meaning. The next stage is data display, where the reduced data is presented using various visual or narrative methods to facilitate understanding. Finally, the conclusion drawing stage is carried out to identify and conclude the main findings from the data that has been studied.

## RESULTS AND DISCUSSION

The Central Market Unit of Pekkabata Polewali was established during the Dutch era as a traditional market managed by the Regional Government of Level II of Polman Regency, located on Jalan Muhammad Yamin and covering an area of approximately 2 hectares. In 1995, it officially became the market management service of the Regional Government of Level II of Polman Regency. The Central Market Unit of Pekkabata Polewali under the auspices of the Polman Regional Company is a Regionally-Owned Enterprise (BUMD) engaged in market management. The regional company is organized on the basis of the company's economic principles in the unity of the Indonesian economic development system based on Pancasila which guarantees the continuity of democracy which functions as a tool to improve the welfare of the community.

Pekkabata Polewali Mandar Central Market obtains vegetables from two main sources, namely local farmers from the Wonomulyo area for vegetables such as kale, spinach, lettuce, long beans, and mustard greens, as well as distributors or traders from Pinrang Regency, Enrekang Regency, and Malino for vegetables such as cauliflower, carrots, cucumbers, tomatoes, chilies, shallots, and garlic.



**Figure 1.** Supply Chain at Pekkabata Polewali Central Market

Information:

- Product Flow : →  
 Supply Chain 1 : → (green)  
 Supply Chain 2 : → (blue)  
 Supply Chain 3 : → (orange)  
 Financial Flow : ←  
 Information Flow : ↔

From the supply chain image above, symbols or directions are given according to each distribution flow, such as Supply chain flow 1 is given a green arrow symbol, while supply chain flow 2 is blue and supply chain flow 3 is orange. Meanwhile, the financial flow is given a reverse flow symbol because the financial flow starts from downstream to upstream, while the information flow is given a symbol of the opposite direction because the information flow comes from both parties.

- Supply Chain 1 : Farmers Sell to Central Market Traders Pekkabata Polewali Sell to End Consumers
- Supply Chain 2 : Outside Polewali Traders Sell to Central Market Traders Pekkabata Polewali Sell to End Consumers
- Supply Chain 3 : Farmers Sell Directly to End Consumers

Flow is the relationship between the purpose of creating a supply chain system and its operating procedures (Azzahra et al 2024). There are three flow patterns in the supply chain at the Pekkabata Polewali central market that show the flow of the supply chain, namely product flow, financial flow, and information flow. Product flow (Vegetables) is from input providers to end consumers. Financial flow flows from downstream to upstream, namely from end consumers to farmers and information flow that runs in two directions.

The comparison between Depari's research (2024) and this study shows similarities in the structure of marketing channels/supply chains, which involve farmers, wholesalers/central market traders, and end consumers. Both have similar structures, namely Marketing Channel I/Supply Chain 1 (farmers sell to wholesalers/central market traders), Marketing Channel II/Supply Chain 2 (farmers sell to wholesalers/outside traders who then sell to central market traders), and Marketing Channel III/Supply Chain 3 (farmers sell directly to end consumers). However, there are differences in research focus and findings. Depari's research focuses on potato marketing channels and finds that farmers choose marketing channel II due to higher prices and easier sales processes. Meanwhile, this study focuses on the vegetable supply chain at Pekkabata Polewali Central Market and identifies three flow patterns in the supply chain, namely product flow, financial flow, and information flow. Thus, this study can complement and expand Depari's findings on marketing channels and supply chains.

### **Product Flow**

Channel 1 starts from local farmers as suppliers of vegetables (Kangkung, Spinach, Mustard Greens, Eggplant, Tomatoes, Chilies, Long Beans, Corn) needed in the Pekkabata Polewali central market which are usually sold per kilo to traders in the market. In channel 1, consumers can buy directly from vegetable traders in the market and get information about the vegetables being sold.

Channel 2 starts from traders from outside Polewali Mandar Regency, namely Enrekang Regency, Pinrang Regency, Malino District, who usually bring vegetables such as cauliflower, shallots, white mustard greens, chayote, celery, chilies, spring onions, and sweet potatoes. These traders have worked well with traders at the Pekkabata Polewali central market. On channel 2, consumers can buy directly from vegetable traders at the market and get information about the vegetables being sold.

Channel 3 starts from local farmers who usually sell their harvested vegetables directly to end consumers at the Pekkabata Polewali central market.

### **Financial Flow**

Financial flow is very different from product flow because financial flow starts from downstream to upstream which is usually in the form of cash or according to payment agreements which usually farmers only entrust vegetables to traders at the Pekkabata Polewali main market. This financial flow is a transfer process that starts from the end consumer then flows to other chain members, namely traders at the Pekkabata Polewali main market and surrounding farmers and outside traders. From the results of the study, 3 financial channels were found, namely channel 1 which starts from the end consumer to traders at the Pekkabata Polewali main market and then to farmers. Furthermore, channel 2 which starts from the end consumer to traders at the Pekkabata Polewali main market and then to collectors from outside Polewali Mandar district. Channel 3 which starts from the end consumer who buys directly from surrounding farmers who sell directly at the Pekkabata Polewali main market. Price determination in this market is caused by the interaction between supply and demand or sellers and buyers in the market. where bargaining power can affect prices. According to Lola (2023), the interaction process between sellers and buyers plays an important role in determining the quantity of goods traded and the market prices formed.

### **Information Flow**

The exchange of information in the supply chain can strengthen the relationship between members of the supply chain. Inaccurate information flow can cause problems so that information flow is very important. In the Pekkabata Polewali central market itself, there are 3 information channels that provide information from downstream, both from the availability or needs of end consumers.

Vegetable traders at the Pekkabata Central Market have good cooperation with local farmers and distributors. Distributors send vegetables every market day (Tuesday and Friday) at 02.00 in the morning before the market starts. Vegetable traders implement stock management by prioritizing the sale of old product stock before new products. Vegetable traders pay close attention to the quality of vegetables purchased from distributors.

Pekkabata Central Market has a stable and quality vegetable supply, so it can meet consumer needs. Vegetable traders strictly supervise the quality of vegetables to ensure that the vegetables sold meet quality standards. Communication using technology such as mobile phones to create good communication between traders, farmers and distributors enables the availability of stable and quality vegetables. Efforts to Maintain

Vegetable Quality by Vegetable traders flushing clean water on vegetables to keep them fresh and making other efforts to maintain the quality of vegetables.

According to Monoarfa (2022), research conducted at the Gorontalo Central Market on the application of supply chain management in supporting vegetable supplies shows that supply chain management involves the integration of activities ranging from procurement of materials, production, to delivery of finished products to customers. In the context of vegetables that are susceptible to damage, supply chain management is crucial because it increases the risk of waste or loss at each stage.

Comparison of research results shows that previous research (Monoarfa, 2022) focused on the implementation of supply chain management in Gorontalo Central Market, emphasizing the integration of activities and reducing the risk of waste. While the current research in Pekkabata Polewali Central Market analyzed the vegetable supply chain, found three flows (product, finance, information) and emphasized the importance of communication and cooperation between members of the supply chain.

Both have similarities in emphasizing the importance of supply chain management in maintaining the quality and availability of vegetables, as well as the interaction between sellers and buyers that affects pricing. The current research complements and extends previous findings on the importance of supply chain management in maintaining the quality and availability of vegetables.

Based on the research results above, the implementation of supply chain management at Pekkabata Polewali Central Market has been running well. Good cooperation between traders, local farmers, and distributors enables a stable and quality supply of vegetables. Effective stock management also helps reduce the risk of losses due to damage or quality degradation of vegetables. The impact of good supply chain management on vegetable stock at Polewali Central Market is:

- 1) Stable vegetable supply: With good cooperation between traders, local farmers, and distributors, Pekkabata Polewali Central Market can ensure a stable and quality supply of vegetables.
- 2) Good vegetable quality: Vegetable traders conduct strict quality control to ensure that the vegetables sold meet quality standards.
- 3) Reducing risk of losses: Effective stock management helps reduce the risk of losses due to damage or quality degradation of vegetables.
- 4) Increasing consumer satisfaction: With a stable and quality supply of vegetables, Pekkabata Polewali Central Market can increase consumer satisfaction.

In the long term, good supply chain management can help increase vegetable sales and increase the income of vegetable traders at Pekkabata Polewali Central Market. Additionally, local governments can consider improving market facilities to improve the quality of vegetables sold and provide support to vegetable traders by providing adequate facilities and increasing access to market information.

## CONCLUSION

The implementation of supply chain management at Pekkabata Polewali Mandar Central Market has been running well. Good cooperation between traders and local farmers and distributors allows for the availability of stable and quality vegetables. Effective stock management also helps reduce the risk of losses due to damage or decreased quality of vegetables.

Suggestions, (1) Improve communication and coordination between traders, farmers, and distributors to ensure stable availability of vegetables; (2) Develop a better information system to monitor vegetable stock and quality; (3) Increase awareness of the importance of vegetable quality for consumer health; (4) Increase cooperation with local farmers to improve the quality and quantity of vegetables. (5) Develop more effective marketing strategies to increase vegetable sales. (6) The local government can consider improving market facilities to improve the quality of vegetables sold.

Recommendations, (1) The local government can provide support to vegetable traders at Pekkabata Central Market by providing adequate facilities and increasing access to market information; (2) Vegetable traders can improve their stock management and vegetable quality capabilities to increase consumer satisfaction; (3) Local farmers can improve the quality and quantity of vegetables by using better technology and improving farm management skills.

## REFERENCES

- Anggraeni, L., Lubis, N., & Junaedi, E. C. (2021). Effect of Salt Concentration on Fermented Vegetable Products: Review: Effect of Salt Concentration on Fermented Vegetable Products. *Journal of Science and Health*, 3(6), 891-899.
- Assyakurrohim, D., Ikhrum, D., Sirodj, R. A., & Afgani, M. W. (2023). Case Study Method in Qualitative Research. *Journal of Science and Computer Education*, 3(01), 1-9.
- Azzahra, S. F., Kalista, M. M., Kamila, F. T., Sabrine, S. H., & Firdaus, F. A. (2024). Analysis of Supply Chain Management of Hydroponic Water Spinach Vegetables RH Farm Bogor. *Journal of Management and Business Economics*, 2(3), 48-63.
- Depari, M. M. S. (2024). Analysis of Potato Supply Chain Management in Magelang District. *Agrisocionomics: Journal of Agricultural Socio-Economics*, 8(3).
- Dharmawati, M. S., Guritno, A. D., & Yuliando, H. (2020). Formulation of Vegetable Commodity Supply Chain Strategy Using Logistic Cost Structure Analysis. *Industria: Journal of Agro-Industry Technology and Management*, 9(3), 217-227.
- Haryono, E. (2023). Qualitative Research Methodology in Islamic Religious Colleges. *An-Nuur*, 13(2).
- Hertina, D., Afiati, L., Munizu, M., Riyadi, S., Thamrin, J. R., & Irawan, D. A. (2023). Supply Chain Management: The Effectiveness of MRP in Achieving Business Success. PT. Sonpedia Publishing Indonesia
- Hidayah, H. H. (2023). Definition, Sources, and Basis of Islamic Education: Indonesian. *As-Said Journal*, 3(1), 21-33.
- Jaya, R., Yusriana, Y., & Fitria, E. (2021). Review of Sustainable Agricultural Product Supply Chain Management: Conceptual, Current Issues, and Future Research. *Indonesian Journal of Agricultural Sciences*, 26(1), 78-91.
- Maula, R. (2024). Public Perception of Local Food in Ngabar Village, Jetis District, Mojokerto Regency (Doctoral dissertation, Jember State Polytechnic).
- Monoarfa, V., Basiru, M. R. S., Duda, R., & Maa, S. N. H. (2022). Analysis of the Application of Supply Chain Management in Supporting Vegetable Inventory for Some Vegetable Traders at Gorontalo Central Market. *JAMBURA: Journal of Scientific Management and Business*, 5(1), 98-101.
- Nadhira, A. H. K., Oktiarso, T., & Harsoyo, T. D. (2019). Supply chain risk management of vegetable products using the supply chain operation reference method and the house of risk model. *Kurawal-Journal of Technology, Information and Industry*, 2(2), 101-117.
- Nurlinda, M. P. (2025). A. Definition of Class Management. *Early Childhood Inclusive Education Management*, 57.
- Radhi, F. & Hariningsih, E., 2019. Analysis of Supply Chain Management Implementation Case Study in Retailer Companies. *JBTL*, 6(1), pp. 33-44.
- Subawa, S. E., Budaya, M. D. I., SE, M., Fahmi, M. A., MT, M., Wanda, S. S. & MM, M. Supply Chain Management
- Supriatna, D., Ciptaningtyas, D., & Supangkat, S. (2022). Optimization of fresh leaf vegetable distribution channels using the saving matrix method (case study: keboen bapak). *Scientific Journal of Agricultural Engineering and Biosystems*, 10(2), 213-.225
- Suriani, N., & Jailani, M. S. (2023). The concept of population and sampling and participant selection reviewed from educational scientific research. *IHSAN: Journal of Islamic Education*, 1(2), 24-36.
- Syamil, A., Subawa, S., Budaya, I., Munizu, M., Darmayanti, N. L., Fahmi, M. A. & Dulame, I. M. (2023). Supply Chain Management. PT. Sonpedia Publishing Indonesia.
- Wahyudin, A., & Zohriah, A. (2023). Scope of Educational Management. *Journal on Education*, 6(1), 3822-3835.