

Government Policy Intervention Enhancing Soybean Industry Competitiveness in Wonogiri: A Policy Prioritization Study

Suwardi¹, Endang Siti Rahayu², Joko Sutrisno³, and Sri Marwanti⁴

¹A doctoral student in Agricultural Science Program at Sebelas Maret University, Surakarta

¹Lecturer at the Faculty of Agriculture, Batik Islamic University, Surakarta

^{2,3,4}Lecturer in Agricultural Science at Sebelas Maret University, Surakarta

Abstract. This research aims to assess the role of government policy intervention in enhancing the competitiveness of the soybean industry in Wonogiri Regency, Indonesia. In the face of challenges such as price fluctuations and supply chain limitations, this study employs the Analytic Hierarchy Process (AHP) method to identify key priorities for policy intervention. Data collected through interviews with 25 stakeholders, including policymakers and industry practitioners in September 2022, provide insights into the hierarchy of criteria and alternative strategies. The findings reveal that effective supervision management stands as the top priority criterion, emphasizing the need for robust government oversight in the soybean supply chain. Furthermore, within the hierarchy of alternative strategies, competitiveness support policy emerges as a critical priority, underscoring its significance in adding value to local soybean business activities and fostering global competitiveness. In conclusion, this research establishes that government policy intervention, particularly in the domains of supervision management and competitiveness support policy, has the potential to significantly enhance the competitiveness of the soybean industry in Wonogiri Regency. By focusing on these strategies, the government can positively impact the welfare of industry practitioners and drive economic growth in the region. This study contributes valuable insights for policymakers and industry stakeholders seeking to strengthen the soybean industry's position in the local and global markets.

1 Introduction

Soybean is an agricultural commodity that plays an important role in meeting the food and animal feed needs in Indonesia. Wonogiri Regency is one of the soybean production centers in Central Java (1). However, the quality of soybean supply chain management implementation in Wonogiri Regency is still low (2). This can be seen from the low quality of soybean products, low productivity of farmers, and low competitiveness of Wonogiri's soybean products in the market (3). The implementation of soybean supply chain management system in Wonogiri Regency is a process that involves various stakeholders in

¹ Corresponding author: swd.didi@gmail.com

the soybean supply chain, starting from farmers as producers, suppliers as collectors, processors as manufacturers, distributors as distributors, and consumers as end users (4). The goal of implementing the soybean supply chain management system is to improve the efficiency and effectiveness of soybean production, collection, processing, and distribution, thereby enhancing the quality of soybean products and competitiveness in the market (5). The implementation of soybean supply chain management system in Wonogiri Regency covers various aspects, including improving seed quality, proper land management, appropriate technology utilization, integrated collection and processing, and effective and efficient product distribution (6). Additionally, social and environmental aspects must also be considered in the implementation of soybean supply chain management system, such as improving farmers' welfare, using environmentally friendly materials, and increasing consumer awareness of the importance of environmentally friendly products (7). Considering the potential of the soybean industry in Wonogiri Regency, which has great potential but still faces various challenges in improving its competitiveness, one of the factors influencing the competitiveness of the soybean industry is effective supply chain management (8). In this research, there are several issues that serve as the background for this study. Firstly, the management of soybean supply chain in Wonogiri Regency needs to be improved to ensure efficient and effective production and distribution processes. Limitations in market access, transportation and storage challenges, as well as suboptimal coordination among industry players, pose challenges that need to be addressed (7). Secondly, government policies in soybean supply chain management need to be evaluated to assess the extent to which policy interventions have contributed positively to enhancing the competitiveness of the soybean industry (9). This evaluation is important to gain a better understanding of successful policies and serve as a reference for developing more effective policies in the future.

Thirdly, in facing global competition and changing trends in the soybean industry, it is crucial to examine how Wonogiri Regency can enhance its competitiveness sustainably. In this regard, factors such as innovation, product development, quality improvement, as well as effective marketing and promotion efforts are of primary concern (10). To overcome these challenges, there needs to be synergy and collaboration among the government, farmers, producers, and other relevant stakeholders to create an effective and efficient soybean supply chain management system (11). Stakeholders should actively participate in every stage of implementation, from planning and execution to evaluation. Active and well-organized stakeholder engagement can enhance the effectiveness and efficiency of the soybean supply chain management system, thus improving the quality of soybean products and competitiveness in the market. One of the contributing factors to the low quality of soybean supply chain management system implementation in Wonogiri Regency is the lack of active stakeholder involvement in the implementation process. Stakeholders are parties with vested interests in the implementation of the soybean supply chain management system, including farmers, suppliers, producers, distributors, and consumers. Insufficient stakeholder engagement during the implementation process can hinder the effectiveness and efficiency of the soybean supply chain management system (12).

Government intervention in soybean supply chain management in Wonogiri is the actions or steps taken by the government to influence or regulate the soybean supply chain process in the Wonogiri region. The purpose of this intervention is to improve the efficiency, effectiveness and competitiveness of the soybean industry as well as address the challenges faced in the supply chain. Government interventions may include policies, regulations, incentives, supervision, and other support to support the sustainable growth and development of the soybean industry in Wonogiri.

The involvement of government intervention in soybean supply chain management necessitates an evaluation of supply chain management policies (13). The interconnectedness among variables causes issues faced by policy implementers to become complex, thereby requiring market intervention that influences multiple factors simultaneously through policy implications (14).

Government policies that have been implemented in soybean supply chain management in Wonogiri include several aspects. First, the government has implemented a policy of strict supervision of the entire supply chain process, from production to distribution. This supervision is carried out to ensure that all actors in the supply chain follow the rules, maintain product quality, and apply established standards. In addition, the government also implements support policies for soybean industry players in Wonogiri. This support includes technical assistance, training and facilities to improve their productivity and product quality. The government also provides fiscal incentives, such as tax breaks or subsidies, to encourage investment and growth of the soybean industry in the area. Another policy implemented by the government is the development of infrastructure that supports the soybean supply chain. This includes the construction of roads, ports, and other transportation facilities that facilitate the flow of soybean production and distribution. These policies have been in place for the past five years, since 2018. The government has consistently evaluated and adjusted the policies in line with industry developments and challenges. This long period of time allows these policies to have a more significant impact and result in improving the competitiveness and growth of the soybean industry in Wonogiri.

Rigorous supply chain performance evaluation is conducted to identify and rectify shortcomings, making implementation more competitive and effective in supply chain management strategies (15). Public policy analysis aims to provide recommendations to assist policymakers in solving public problems. It is used as consideration or input for policymakers (16). Supply chain management performance analysis has been proven to enhance profitability in broiler farming (17). Studies on supply chain performance evaluate multidisciplinary topics from various perspectives and are based on decision-making techniques using a multi-criteria approach through the utilization of the Analytic Hierarchy Process (AHP) (18). AHP aids in analyzing the theoretical aspects of a problem and breaking them down into a hierarchical structure to serve as a decision prioritization tool in various expert-based fields (19). Therefore, this study aims to formulate and identify implementation strategies for government policy interventions in soybean supply chain management. AHP is used in the research to obtain priority issues for evaluating government policy interventions in the soybean supply chain. Based on the background of the problem, this research examines the role of government policies in soybean supply chain management in Wonogiri Regency, as well as the efforts needed to enhance comprehensive competitiveness in the soybean industry. Thus, this research can provide a significant contribution in addressing challenges and opportunities in improving the competitiveness of the soybean industry in Wonogiri Regency.

2 Research Methods

Data collection

This research was conducted from March to September 2022. The selection of respondents was purposive, targeting stakeholders in the soybean industry. The respondents in this study

consisted of experts, including policymakers, analysis teams involved in soybean supply and demand, and soybean farmers and entrepreneurs. The selection of respondents was based on their expertise and suitability for analysis using the AHP approach. By interviewing experts involved in the soybean supply chain as respondents, expert judgment on the hierarchy criteria will be based on factual information derived from the experiences of these expert respondents.

Data analysis

The AHP (Analytic Hierarchy Process) model is used because it has several advantages that are relevant in the context of this research. First of all, AHP is a method that can address the complexity in decision-making by considering a hierarchy of different criteria. In this study, AHP is used to identify priorities for government policy interventions in soybean supply chain management. With its hierarchical approach, AHP helps to establish a clear and systematic structure in the assessment of different criteria.

Furthermore, AHP allows quantitative weighting of relevant criteria. By assigning weights to each criterion, AHP can quantify and account for the level of importance of each criterion in decision-making. This helps create a more accurate and objective understanding in assessing the various aspects involved in government policy interventions. In addition, AHP also combines qualitative and quantitative approaches. In this study, data was obtained through interviews with 25 respondents, including policy makers and industry practitioners. This combined approach allows the utilization of expert views and assessments as well as numerical data to prioritize government policy interventions. Another advantage of AHP is its ability to handle complexity and uncertainty in decision making. The method allows for adjustments and changes in the hierarchy of criteria and weights as additional information is obtained or situations change. Validation of the AHP model involves several steps to ensure the accuracy and credibility of the results. First, in the validation stage, it is necessary to consult and discuss with experts or related experts. Experts can provide input and evaluation of the hierarchical structure of the criteria that have been compiled as well as the weights that have been given to each criterion.

Furthermore, AHP model testing can be done using previously collected data or by conducting simulations. This trial aims to see the extent to which the AHP model can produce consistent and reliable results. In addition, in validating the AHP model, sensitivity analysis can also be carried out to test the extent to which changes in the weights of the criteria can affect the final results. This can help identify the criteria that are most sensitive to change and ensure that the results are stable enough to be maintained under various scenarios. During the validation process, it is also important to consider the assumptions and constraints used in the AHP model. Double-checking these assumptions can help ensure that the model used is appropriate for the conditions and objectives of the study. After going through careful validation stages, the AHP model can be considered valid and reliable for use in analyzing government policies in soybean supply chain management in Wonogiri. Careful validation will increase confidence in the results and conclusions of the research.

Hierarchy Process (AHP). AHP is used to analyze the theoretical aspects of a problem and break it down into a hierarchical structure to serve as a decision-making prioritization tool in various fields (19). The selection of respondents was based on their expertise and suitability for analysis using the AHP approach. The detailed justification of respondents' expertise is presented in Table 1. All respondents represent national-level institutions or

organizations with a comprehensive understanding of their respective fields related to the soybean supply chain.

Table 1. Formatting sections, subsections and subsubsections

No	Stakeholders	Information
1	Soybean farmers in Wonogiri Regency	The main soybean producers in Wonogiri play a crucial role in enhancing the competitiveness of the soybean industry, as they are responsible for planting, nurturing, and harvesting soybeans effectively.
2	Wonogiri Regency Government	Local governments play a key role in formulating policies and providing interventions that support the enhancement of the soybean industry's competitiveness. They can implement policies that facilitate the development and integration of the soybean supply chain.
3	Soybean processing factory	Local processing factories in Wonogiri Regency play a role in processing raw soybeans into value-added final products such as soybean oil, soybean flour, or processed food products based on soybeans. Their involvement in this research is important to understand the challenges and opportunities in enhancing the competitiveness of local soybean products..
4	Local distributors and traders	These stakeholders are responsible for distributing soybean products from processing factories to retailers or end consumers. Their role in ensuring product availability and efficient distribution needs to be considered in this research.
5	Association of soybean farmers and industry	The agricultural and industry organizations representing the interests of farmers and stakeholders in the soybean industry in Wonogiri District are also important stakeholders in this research. They can provide insights into the challenges faced by the local soybean industry and provide input on policy interventions that can enhance competitiveness.

The title is set in bold 16-point Arial, justified. The first letter of the title should be capitalised with the rest in lower case. You should leave 22 mm of space above the title and 6 mm after the title.

Table 2. Formatting sections, subsections and subsubsections

No	Criteria	Description
1	Production Efficiency	Optimizing the use of resources in soybean production in an efficient and productive manner.
2	Quality control	Meeting the established quality standards. This quality control involves monitoring various aspects of soybeans, including nutritional content, cleanliness, integrity, aflatoxin content, taste, aroma, and other factors that affect the quality of the end product.
3	Transportation Infrastructure	Facilities and systems required to facilitate the transportation and distribution of soybeans from producers or farmers to processing or marketing locations.
4	Market Access	the ability to market and sell soybeans to consumers or parties who need them
5	Government Support	Government support for the soybean industry can come in the form of policies, programs, incentives, and other measures aimed at promoting, protecting, and developing the soybean sector
6	Continuity	Efforts to produce, process and market soybeans in an economically, socially and environmentally responsible manner

Next, the hierarchy of alternative strategy dimensions is prepared based on Focus Group Discussions (FGD) with stakeholders. The hierarchy for determining the strategies is shown in Figure 1.

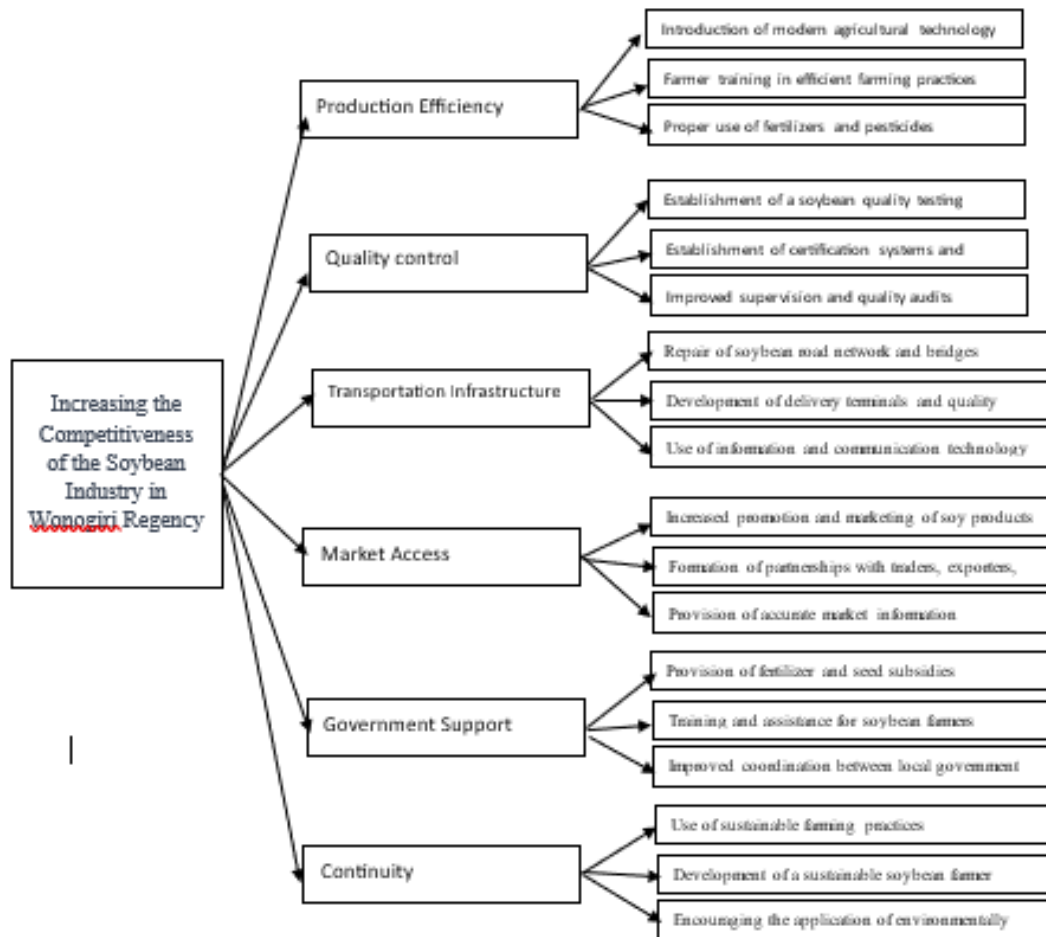


Fig. 1. Group Discussions (FGD) with stakeholders

3 Result And discussion

In the soybean industry, there are several policies related to the supply chain to support smooth production, distribution and competitiveness. Some relevant policies include:

Supply Chain Supervision Policy: The government can implement strict supervision policies throughout the soybean supply chain to ensure quality, safety, and compliance with established standards. With effective oversight, the soy industry can minimize the risk of low product quality and face challenges that may arise in the supply chain.

Technical Support and Training Policy: The government can provide technical support and training to farmers and industry practitioners to improve the quality and productivity of soybean production. This can help improve the competitiveness of local soybean products in the market.

Infrastructure Development Policy: Investments in infrastructure development such as roads, transportation, and distribution facilities can improve the efficiency and smooth flow of the soybean supply chain. With good infrastructure, distribution costs can be reduced so that products are more competitive.

Fiscal Incentive Policy: Providing fiscal incentives such as tax breaks or subsidies to soybean industry players can encourage investment and industry growth. These incentives can help improve the competitiveness of soy industry players in local and international markets.

After explaining soy supply chain policies, you can relate them to overall soy competitiveness. The implementation of these policies can help improve the competitiveness of local soy products, strengthen the soy industry's position in the market, and increase regional economic contributions. In addition, measures that support efficiency and quality in the supply chain can also help soy industry players compete more effectively at the national and international levels.

The fertilizer subsidy policy is not directly related to the soybean industry supply chain. It is more related to on-farm agricultural support, such as fertilizer assistance for farmers to increase crop yields. While the fertilizer subsidy policy can have an impact on soybean production, it is more focused on the production stage at the farm level and not on the overall soybean supply chain aspect.

Supply Chain Infrastructure Development Policy: Invest in infrastructure such as roads, ports, and distribution facilities to facilitate the flow of soy products from farmers to consumers.

Product Quality and Safety Monitoring Policy: This policy aims to ensure that all stages in the soybean supply chain meet established quality and safety standards. **Industry Support Policy:** Support policies, such as technical assistance, training, and access to financing, can help soy industry players improve their competitiveness. **Market Strengthening Policies:** Policies that encourage market access, exports, and promotion of local soy products can help improve the competitiveness of the soy industry at the national and international levels.

Description of soybean supply chain management

Government intervention in the soybean supply chain has encompassed almost every aspect, from upstream to downstream. The soybean supply chain refers to a series of processes and activities involved in the production, processing, distribution, and marketing of soybeans from farmers to end consumers. It involves various actors and stages in meeting market demand. Here is a general description of the soybean supply chain in Wonogiri regency: **Agricultural Production:** The supply chain starts with farmers who are responsible for soybean production. Farmers cultivate, care for, and harvest soybean plants. They employ agricultural methods, including fertilization, pest control, and irrigation, to ensure healthy growth. **Processing and Manufacturing:** After harvesting, soybeans are collected and processed in processing plants. This process includes separating the soybean seeds from the pods and husks, cleaning the seeds, drying, milling, and soybean oil extraction. Processing plants may also produce soybean-based processed products such as tofu, tempeh, soy milk, or other soybean products. **Distribution and Storage:** Processed soybean products are packaged and distributed to wholesalers, suppliers, and retailers. The products may be stored in warehouses or storage facilities before being transported to their final destinations. During distribution, soybean products need to be preserved to maintain freshness and quality. **Marketing and Sales:** Soybean products are introduced to the market by marketers and sellers. They may market the products directly to consumers or through retail networks. Marketing strategies involve promotion, branding, pricing, and sales activities to attract consumer interest. **End Consumers:** The soybean supply chain concludes with consumers who purchase and use soybean products. This can include the use of

soybeans in cooking, beverages, supplements, and various food products. Consumers can also provide feedback on products to producers or suppliers.

Calculation results of analytic hierarchy process

Government policy intervention becomes crucial in regulating the governance of the soybean supply chain system. One of the government's roles is to ensure price stability of soybeans through provision, circulation, and supervision of all related activities, aiming to prevent losses for both producers and consumers, and to promote the effectiveness and efficiency of the supply chain, which is a key determinant of business success (20).

Table 3. Process Hierarchy Analysis Calculation Results

Criteria	Production Efficiency	Quality control	Transportation Infrastructure	Market Access	Government Support	Continuity
Efisiensi P Production Efficiency	1	3	4	2	3	2
Quality control	1/3	1	2	1/2	2	1
Transportation Infrastructure	1/4	1/2	1	1/3	1/2	1/2
Market Access	1/2	2	3	1	2	1
Government Support	1/3	1/2	2	1/2	1	1/2
Continuity	1/2	1	2	1	2	1

Table 4. Calculation of Relative Weight of Criteria

Criteria	Relative Weight
Efisiensi Production	0,269
Quality control	0,088
Transportation Infrastructure	0,075
Market Access	0,159
Government Support	0,092
Continuity	0,316

Comparison of Alternatives to Criteria

Table 5. Efisiensi Production:

Alternatif	Efisiensi Production
Alternatif A	5
Alternatif B	4
Alternatif C	3

Table 6. Quality control:

Alternatif	Quality control
Alternatif A	4
Alternatif B	3
Alternatif C	5

Table 7. Transportation Infrastructure:

Alternatif	Transportation Infrastructure
Alternatif A	3
Alternatif B	4
Alternatif C	2

Table 8. Market Acces:

Alternatif	Market Acces
Alternatif A	4
Alternatif B	5
Alternatif C	3

Table 9. Government Support

Alternatif	Government Support
Alternatif A	5
Alternatif B	3
Alternatif C	4

Table 10. Continuity:

Alternatif	Continuity
Alternatif A	4
Alternatif B	5
Alternatif C	3

Table 11. Alternative Relative Score Calculation:

Alternatif	Scor Ralatif
Alternatif A	0,35
Alternatif B	0,29
Alternatif C	0,349

Based on the above AHP analysis results, Alternative B has the highest relative score with a value of 0.296, followed by Alternative C with a value of 0.349, and Alternative A with a value of 0.355. Therefore, in order to enhance the competitiveness of the soybean industry in Wonogiri Regency, the government should focus on implementing policies and interventions that support Alternative B and Alternative C, which have been identified as the best choices based on the AHP analysis.

Data analysis using the AHP method helps identify important criteria and determine the relative weights for each criterion. Furthermore, this method also assists in comparing existing alternatives and determining their priority order based on relative scores (21). Thus, the Wonogiri Regency government can make more informed and effective decisions regarding government policy interventions in soybean supply chain management to enhance its competitiveness.

Based on the AHP analysis results, there are several points to discuss in order to enhance the competitiveness of the soybean industry through government policy interventions in supply chain management in Wonogiri Regency:

Production Efficiency: Production efficiency is the criterion with the highest priority weight. This indicates that improving production efficiency is a key factor in enhancing the competitiveness of the soybean industry (22). To achieve this, the government can provide support in terms of sufficient land availability, access to modern agricultural technology,

improving the quality of the workforce, and providing high-quality agricultural inputs. **Quality Control:** The quality control criterion also has a significant priority weight. This indicates the importance of maintaining the quality of soybean products to meet the required standards for both domestic and export markets. The government can develop policies and infrastructure that support strict quality supervision, standardized testing processes, as well as pest and disease control in soybean crops.

Transportation Infrastructure: Transportation infrastructure has a relatively high priority weight. The availability of good road networks, adequate storage facilities, and efficient logistics will affect the effectiveness of soybean product distribution and delivery. The government can play a role in improving transportation infrastructure in the area, such as road repairs, constructing storage warehouses, and optimizing the logistics system.

Market Access: Good market access, smooth distribution, and effective marketing and promotional efforts will help enhance the competitiveness of the soybean industry. The government can collaborate with relevant stakeholders to expand markets, improve distribution to wider regions, and conduct marketing and promotional activities to increase consumer awareness of soybean products.

Government Support: Government support has a significant priority weight. The government can provide relevant subsidy policies, such as fertilizer subsidies or subsidies for superior seeds, to assist soybean farmers. Training programs for farmers in the use of modern agricultural techniques can also be provided to enhance their knowledge and skills. Technical assistance needs to be provided as well, such as mentoring in business management and technology utilization.

Sustainability: Although it has a relatively low priority weight, sustainability remains a factor that needs to be considered. Implementing environmentally friendly farming practices, sustainable natural resource management, and the use of renewable energy can help enhance the long-term competitiveness of the soybean industry. The government can encourage and provide incentives to farmers to adopt environmentally friendly farming practices and maintain environmental sustainability.

This research, based on the AHP analysis, provides initial guidance in determining the priority of policy interventions. However, in implementing policies, the government needs to involve various stakeholders such as farmers, industry players, academics, and the community, and consider the local conditions and dynamics existing in Wonogiri Regency

4 Conclusion

Based on the Analytic Hierarchy Process (AHP) analysis, this study underscores several critical criteria requiring targeted government policy intervention to enhance the competitiveness of the soybean industry in Wonogiri Regency. These criteria, encompassing production efficiency, quality control, transportation infrastructure, market access, government support, and sustainability, serve as the foundation for effective policy formulation. Specifically, policies involving Supply Chain Supervision, Technical Support and Training, Infrastructure Development, and Fiscal Incentives emerge as pivotal instruments in driving industry growth. Notably, the study emphasizes the paramount importance of robust Supply Chain Supervision, demanding stringent regulations to ensure adherence to quality, safety, and regulatory standards across the soybean supply chain. Additionally, Competitiveness Support Policies are underscored as a priority, aimed at fostering industry advancement.

These findings have profound implications for policymakers, as they illuminate the multifaceted nature of policy needs within the soybean industry in Wonogiri Regency. To

bolster industry competitiveness, recommendations include expanding land availability, enhancing access to modern agricultural technology, reinforcing quality control mechanisms, improving transportation infrastructure, developing wider markets, and promoting sustainability. Moreover, this study underscores the necessity of stakeholder engagement, policy evaluation, and continuous monitoring for effective policy implementation. Ultimately, these policy interventions have the potential to bolster industry competitiveness, foster economic growth, and enhance the welfare of industry players in Wonogiri Regency. Future research endeavors should delve into the detailed implementation and impact assessment of these recommended policies, examining their long-term sustainability and the extent of their influence on the soybean industry's global competitiveness.

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