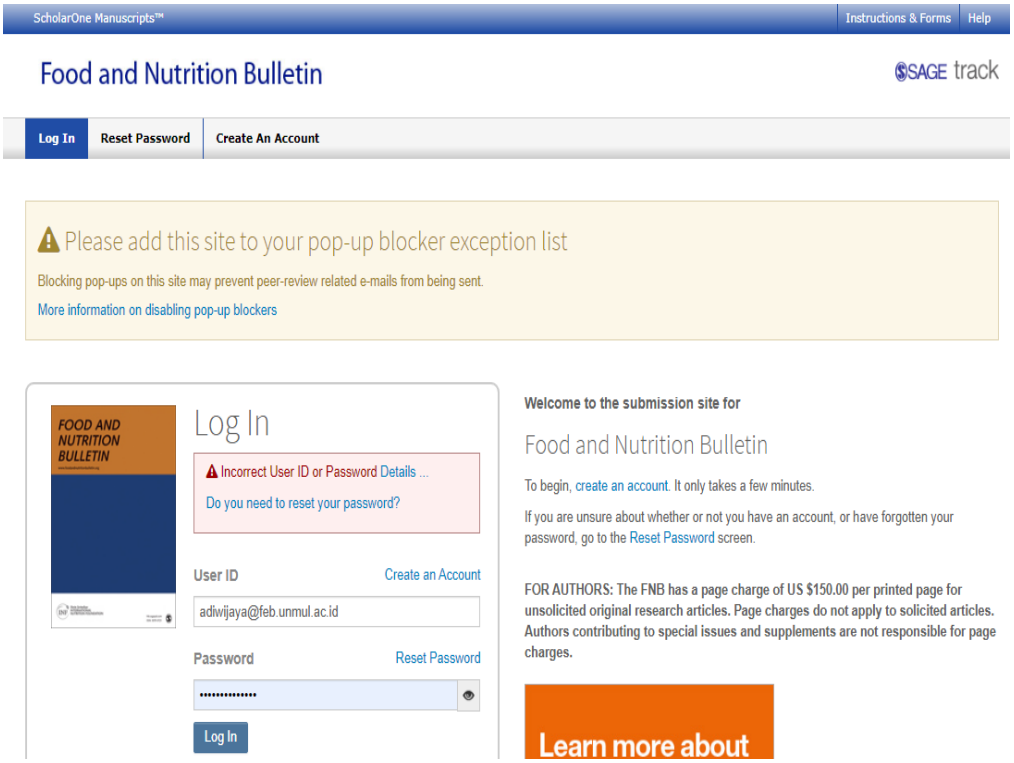
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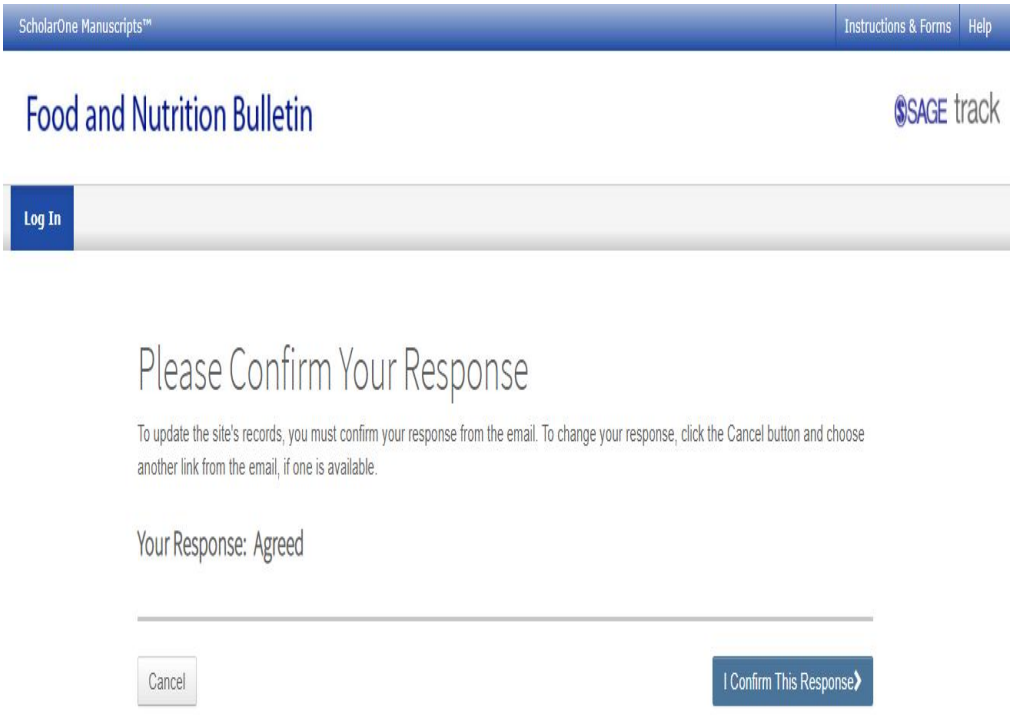
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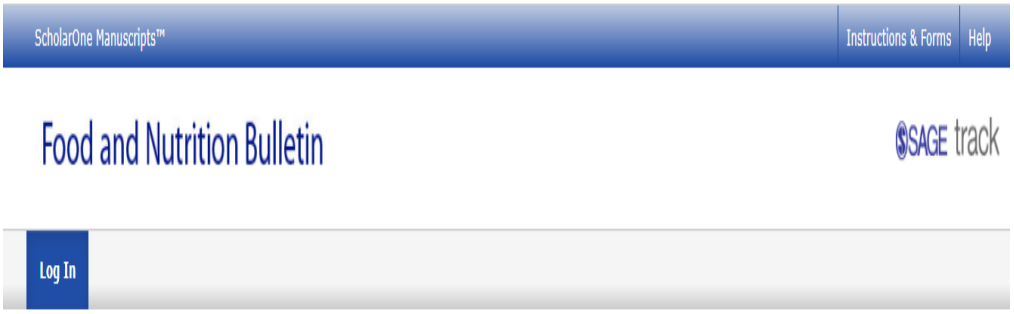

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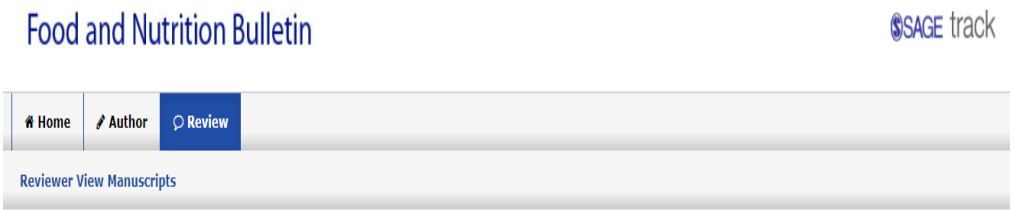

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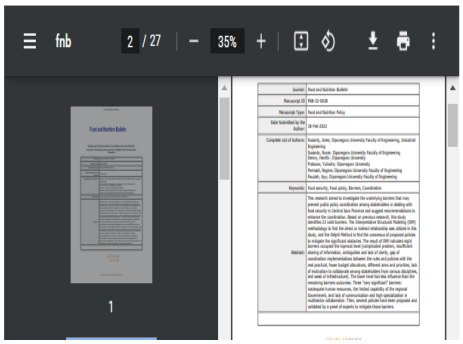

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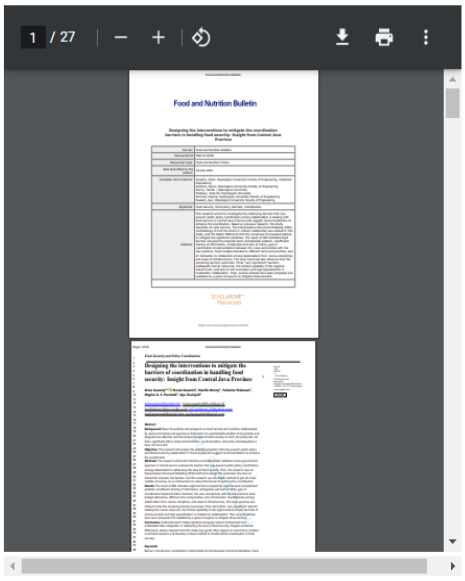

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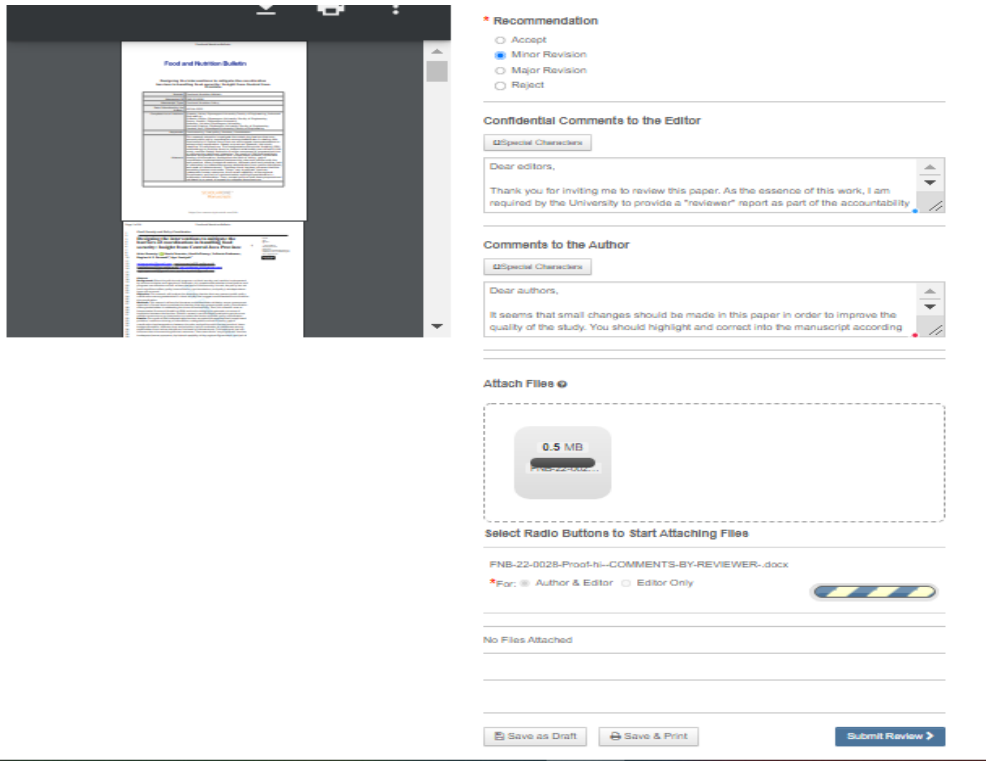
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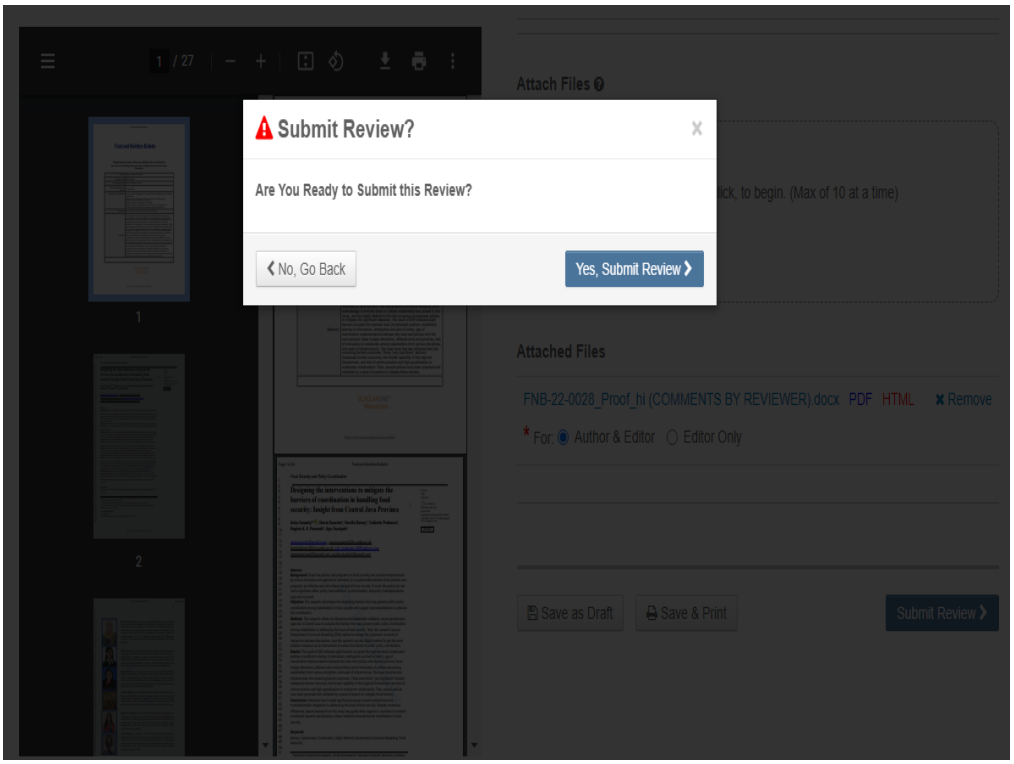
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Keywords:	Food security, Food policy, Barriers, Coordination
Abstract:	This research aimed to investigate the underlying barriers that may prevent public policy coordination among stakeholders in dealing with food security in Central Java Province and suggest recommendations to enhance the coordination. Based on previous research, this study identifies 22 valid barriers. The Interpretative Structural Modeling (ISM) methodology to find the direct or indirect relationship was utilized in this study, and the Delphi Method to find the consensus of proposed policies to mitigate the significant obstacles. The result of ISM indicated eight barriers occupied the topmost level (complicated problem, insufficient sharing of information, ambiguities and lack of clarity, gap of coordination implementations between the rules and policies with the real practical, fewer budget allocations, different aims and priorities, lack of motivation to collaborate among stakeholders from various disciplines, and weak of infrastructure). The lower level has less influence than the remaining barriers outcomes. Three "very significant" barriers: inadequate human resources, the limited capability of the regional Government, and lack of communication and high specialization in multisector collaboration. Then, several policies have been proposed and validated by a panel of experts to mitigate those barriers.

Food Security and Policy Coordination

Designing the interventions to mitigate the barriers of coordination in handling food security: Insight from Central Java Province

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Comment [i-[1]: Add the location "Indonesia" for clarity.

Aries Susanty[1]*, Novie Susanto[1], Hanifa Denny[1], Yulianto Prabowo[2], Regine A. S. Permadi[1], Ayu Fauziyah[1]

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Abstract

Background: Given the policies and programs on food security and nutrition implemented by various ministries and agencies in Indonesia, it is questionable whether those policies and programs are effective and will achieve the goal of food security. In truth, the policy has not had a significant effect; policy harmonization, synchronization, and policy interdependence have not occurred.

Objective: This research will analyse the underlying barriers that may prevent public policy coordination among stakeholders in food security and suggest recommendations to enhance the coordination.

Methods: This research utilizes the literature and stakeholder validation across government agencies in Central Java to evaluate the barriers that may prevent public policy coordination among stakeholders in addressing the issue of food security. Then, this research uses an Interpretative Structural Modelling (ISM) method to design the systematic structure of interaction between the barriers. Last this research use the Delphi method to get the most reliable consensus on an intervention to reduce the barrier to public policy coordination

Results: The result of ISM indicated eight barriers occupied the topmost level (complicated problem, insufficient sharing of information, ambiguities and lack of clarity, gap of coordination implementations between the rules and policies with the real practical, fewer budget allocations, different aims and priorities, lack of motivation to collaborate among stakeholders from various disciplines, and weak of infrastructure). The lower level has less influence than the remaining barriers outcomes. There were three "very significant" barriers: inadequate human resources, the limited capability of the regional Government, and lack of communication and high specialization in multisector collaboration. Then, several policies have been proposed and validated by a panel of experts to mitigate those barriers.

Conclusions: Indonesia hasn't made significant progress toward multisectoral and multistakeholder integration in addressing the issue of food security. Despite contextual differences, lessons learned from this study may guide other regions or countries to conduct scrutinized research and develop a robust method to handle barrier coordination in food security**.**

Keywords

Barriers, Central Java, Coordination, Delphi Method, Interpretative Structural Modelling, Food Insecurity

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Ayu Fauziyah is a student at the Industrial Engineering Department, Diponegoro University. Her research interests include sustainability in food security, supply chain, and organization behaviour. At present, she working on final project with focus on the system dynamic of public policy implementation. She also takes an active role in various student institutions, such as AISEC

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Introduction

The concept of "food security" has evolved and altered since the 1974 World Food Conference. There are almost 200 different definitions of food security presently (Darma and Darma, 2020). At the early stage of social and economic development, food security refers to the difficulty of securing enough food supply, and food production was at the heart of food security. Later, food security has evolved to include not just food production but also the matching of food production to demand (Qi et a, 2015). Food security entails ensuring an appropriate supply of food as well as the population's access to it, mostly by boosting effective demand through income growth or transfers. The adoption of new technology, fiscal and exchange rate policies that impact general economic development, and the implications of wealth distribution on food security in emerging nations are all micro and macro concerns. Food security strategies frequently include supply-demand structural problems such as variety, quality, and region of food product, which eventually inflated the cost of food product storage and transportation, led to conflicts of interest between the production and sale regions, and even resulted in regional and structural food shortages, putting social stability and economic development at risk (Wu et al, 2016). Policymakers in developing countries are often challenged with the conundrum of raising food prices to enhance food production and the food security of low-income consumers, since higher prices impose a considerable cost on this category of customers. In many developing countries, the impact of the global economic downturn on family income has recently been worsened by relatively high food expenses, leading in a rise in the number of undernourished households (Fanzo et al, 2010). As a consequence, developing-country governments should use a mix of short- and long-term policy approaches to ensure and improve food security. Some elements should be included in the policy that affect food availability in local markets, while others affect people's access to food, and still others affect food intake, or how many nutrients a person receives from a particular source of food (Boratyska and Huseynov, 2017).

Currently, food security is still the top priority Indonesian national development 2020-2024. For the last five years, the policy direction of the Food Security Agency for strengthening food security in Indonesia was focused on three main areas – food availability, food accessibility and food utilization. Shortly, there were some policies and programmes to ensure food security proposed by Indonesian Government (Arif et al., 2020).

- First, the Indonesian Government has offered special policy social support in nine of basic foods to the targeted population. The targeted population was found in either the Integrated Social Welfare Data or local government data. the Integrated Social Welfare Data includes information on who is eligible for social assistance programs such as (a) social welfare rice assistance, (b) Family Welfare Card, (c) Indonesian Conditional Cash Transfer Program, and (d) Smart Indonesia Program.
- Second, National Action Plan for Food and Nutrition 2017–2019, subsequently renamed the National Strategic Policy and Plan of Action on Food and Nutrition (RAN-PG) is issue by the Minister for National Development Planning/Head of BAPPENAS. RAN-PG collaborates 20 ministries and boards and three coordinating ministries that operate under the authority of the Coordinating Ministry for Human Development and Cultural Affairs. It is directly responsible to the President. The five pillars of the previous RAN-PG, which ran from 2011 to 2015, were carried over into the RAN-PG, which runs from 2017 to 2019. According to the RAN-PG 2017–2019, policies to accelerate nutrition improvement comprise a variety of activities targeted at achieving the following objectives: (i) improving nutrition surveillance, it is important to monitor child growth; (ii) enhancing access and quality of health and nutrition services, emphasizing the first 1,000 days of life, adolescents, brides, and expectant women, among other populations. In addition, the program distributes supplemental food, which is particularly beneficial to low-income families and those who live in disadvantaged or border regions; (iii) encouraging behavioral change in the areas of health, nutrition, sanitation, cleanliness, and parental reponsibility; (iv) development of village weighing stations and holistic, integrative early childhood education would help to strengthen the involvement of society in nutrition reform programs, particularly those targeting pregnant women, women of reproductive age, and children under 5 in disadvantaged and border regions; (v) increasing the effectiveness of nutrition legislation and standards in their implementation and assessment, and. (vi) enhancing inter-sectoral cooperation in conducting nutrition-sensitive and nutrition-specific interventions, with central, provincial, and district governments' increased capacity to execute the RAN-based initiatives. PG
- Third, the National Strategy to Accelerate Stunting Prevention 2018-2024. This program is issue by the Vice President and the Coordinating Ministry for Human Development and Cultural Affairs as deputy. The general purpose of this program is to accelerate the reduction of stunting within existing policy and institutional frameworks. This purpose is to be achieved through the following five special objectives: (i) ensuring that stunting reduction is a government and community priority at all levels; (ii) Increase public awareness and encourage community

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behavioral change; (iii) strengthen convergence by coordinating and consolidating central, regional, and village programs and activities; (iv) increase access to nutritious food and encourage food security; and (v) increase monitoring and evaluation as the foundation for ensuring quality services, improved accountability, and accelerated learning.

Given the fact that the policies and programs on food security and nutrition implemented by various ministries and agencies, it is questionable whether those policies and programs are effective and will achieve the goal of food security. In truth, the policy has not had a significant effect; policy harmonization, synchronization, and policy interdependence have not occurred (Aziza, 2019). According to ASEAN statistics, Indonesia has the second highest poverty rate among the ten ASEAN nations, at 51.8 percent. Then, in the EIU's Global Food Security Index (GFSI), Indonesia is ranked 62nd out of 113 nations (Economist Intelligence Unit.2019). In comparison to Southeast Asian nations such as Singapore, Malaysia, and Thailand, Indonesia's food security rankings remain low. Indonesia came in last place among Southeast Asian nations, after Singapore (first), Malaysia (second), Thailand (fifth), and Vietnam (fifth) (ranked 54). Indonesia's food security score of 55.2 places it fifth in Southeast Asia when it comes to cost. Then there's the availability score, which is 58.2 (ranked 3rd). After that, Indonesia only obtained a score of 34.5 (8th place) in terms of quality and safety, but it received a score of 43.9 in terms of resilience and natural resources (9th rank). Furthermore, according to the statistics from the Global Hunger Index (GHI) 2019, Indonesia's hunger rate is in the severe category. With a score of 20.1 percent, Indonesia is rated 70th out of 117 Indonesian nations (Alwi et al, 2020). According to Susenas figures from 2019, the number of individuals residing in Central Java Province who were facing acute food insecurity in 2019 was 579,501, or 1.67 percent of the entire population of Central Java Province, which was 34,661,084 people. This amount also represents 9.79 percent of the total number of Indonesians experiencing severe food insecurity, which stands at 5,921,307 people, or 0.22 percent of the country's total population.

The ineffectiveness of Indonesian food security policies and programs might be due to a lack of coordination among stakeholders. "Coordination," a concept widely used in recent years, is derived from Synergistics, created in the 1970s by Haken, a German scientist (Wu et al., 2016). The role of coordination for food security is "at best checkered." In this case, a set of decisions is coordinated if adjustments have been made. The negative effects of each choice for other decisions in the set are avoided, lessened, counterbalanced, or outweighed to some extent and with some frequency. In another world, coordination happens when choices taken in one program or organization are considered in other programs or organizations in order to minimize conflict (Margulis, 2017). Making excellent policy coordination is not easy, since various prior studies have shown that the barrier to successful coordination is high (such as Peters, 2018; Vel et al., 2016; Candraweni and Rahayu, 2020; etc., see in next section). As a result of this phenomenon, this research will analyze the underlying barriers that may prevent public policy coordination among stakeholders in dealing with food security and suggest recommendations to enhance the coordination. This research should be done to ensure an integrated policy and programmatic approach to food security and vulnerability. The research was then divided into two phases. In the first phase, conduct a literature review on the barriers to public policy coordination in dealing with food security that has been published by previous authors and identify the barriers to be verified by some experts. In the second phase, a questionnaire-based survey was delivered to the experts from policymakers and government agencies involved in food security policy planning. The primary goals of the questionnaire are to identify actual barriers and comprehend and evaluate contextual relationships and hierarchical degrees of barriers.

Furthermore, the paper is arranged in the following way to accomplish the goal. Section 2 discusses the barriers related to public policy coordination (in the general subject and the context of food security) and sheds some light on them. Section 3 describes the study methodologies and processes utilized to generate the barrier-related connection using the interpretive structural modeling (ISM) approach. Section 4 presents the ISM approach's details to the barriers related to the public policy coordination in handling the food insecurities and explores the conclusions based on the findings. Finally, in section 5 papers, the article summarizes key results, the theoretical and managerial implications of the findings, and the study's limitations and recommendations for further research. This study will contribute to a credible and accurate resource for comparable studies and ongoing research on policy coordination to address the issue of food security.

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Literature Review

Food Security and Its Research

There are around 200 different definitions of food security (Hoddinott, 1999; Smith et al., 1993), with the following being the most often used:

> 'Food security exists when access to sufficient, safe and nutritious food that meets most of their dietary needs and food preferences that are needed to life in a healthy life (Food and Agriculture Organization (FAO)) (Food and Agriculture Organization" (FAO), 2002).

According to FAO, food security is multidimensional and built on four "pillars," namely, physical availability of food, economic and physical access to food, food utilization, as well as long-term stability of the triangle dimensions (Food and Agriculture Organization of the United Nations (FAO), 2008). When "the availability of nutritionally sufficient and safe meals, or the capacity to get appropriate foods in socially acceptable ways, is restricted or unpredictable," food insecurity is present (Anderson, 1990). It has been acknowledged that alleviating food insecurity is critical, as reflected in the second aim of the Sustainable Development Goals (SDGs) for 2030 (United Nations, 2017).

Study about food security and health problem have been done by several researcher. Some of researcher, try to investigate the relationship between household food insecurity and malnutrition in children and women, particularly regarding health issues. Regarding health issues, household food insecurity can negatively affect food consumption in terms of both quantity and quality, leading to undernourishment, particularly for women and children. A positive relationship between family food insecurity and childhood weight (Dubois et al., 2006; Casey et al., 2006), child stunting (Bredenkamp et al., 2014; Lee et al., 2012), and undernutrition (Esmail and Rajikan, 2012). On the other hand, the others have discovered no connection between food insecurity and undernourishment (Osei et al., 2010; Alaimo et al., 2001; Kaiser et al., 2002; Bhattacharya et al., 2004; Cook et al., 2004). The negative relationship between family food insecurity and childhood malnutrition was shown by some findings of previous studies (Rose et al., 2006; Matheson et al., 2002; Saha et al., 2009; Hackett et al., 2009).

Apart from research related to food security and malnutrition, the important thing is research related to coordination in carrying out programs to guarantee food security, both in case studies in Indonesia and outside Indonesia. This study is extremely significant since food security is often seen as a wicked issue and planning for food security needs to be coordinated at all levels of government to be effective. A wicked issue is one that is defined as being complex, multidimensional, transversal, uncertain, and controversial, in the sense that it is the subject of various or even contradictory definitions and approaches that are impossible to resolve definitively, that crystallize political conflicts, and that cannot be easily dealt with by a monothematic and specialized agency (Newman and Head 2015). Related to food security and coordination problem, Nkwana (2015) advocated for a coordinated approach in the implementation of the National Policy on Food and Nutrition Security in South Africa, as the guiding framework for maximizing synergy between government departments and civil society. Wu et al (2016) make an assessment of food security in china based on production-consumption coordination perspective. Batch et al (2020) indicated that multisectoral collaboration has helped reduce undernutrition in Ethiopia. Mayett-Moreno and López Oglesby (2018) indicated that lack of coordination become challenge in food safety policies and governance along a heterogeneous agri-food chain and its effects on health measures and sustainable development in Mexico. Darma et al (2020) indicated that coordination between Ministries and State Institutions is the key to success in implementing this food policy strategy. More recently, Rasul and Neupane (2021), proposed a framework to help governments in coordinating the actions of diverse actors across the water, energy and food sectors and designing policies and programs that address trade-offs

The Barriers for Public Policy Coordination

While coordination has been a problem in governance for centuries, it became a priority in the 1980s and has remained so since then (Peters, 2018). A wicked problem, such as food security, generates unique coordination challenges that include the following characteristics: high task uncertainty, low technical interdependence, potential conflicts and power imbalances between different approaches to the same problem, the abundance and heterogeneity of both the results and the issues addressed by the research in question, as well as – occasionally – the issue's lack of legitimacy in comparison to other problems (Bernard de Raymond, 2018). According to previous authors, coordination issues are not always caused by conflict; they may occur due to various reasons, factors, or barriers, as seen in Table 1.

Table 1. Factors or Barriers for Public Policy Coordination

No.	Barriers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Food resolution of food security issues are not in the hands of a single player and will not be	X	X	X	X		X	X		X				X		X

No.	Barriers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	resolved by simply owns or sector actors. It is such a complicated issue. (BAR1)															
2	Reduced policymaking correlations have detrimental impacts, including duplications, inconsistencies, and becoming a negative influence on other policies (BAR2)	X										X				
3	Communication and specialties may be a barrier to multisector cooperation since it is difficult to bring together a diverse set of actors from many disciplines, each with its own mandates, guiding principles, goals, and interests. (BAR3)	X	X	X	X	X	X	X	X	X	X		X		X	X
4	Information is power but there is insufficient sharing of information because many organizations perform to horde information (BAR4)	X			X		X	X		X						
5	Even while laws describe the institutions and persons who have legal power to steer food security policies, there are ambiguities and lack of clarity around authority over defining policy directions and making choices in a (legal-) normative manner (BAR5)	X	X	X	X				X	X						X
6	There is no explicit legislation that encourages cross-sector collaboration (BAR6).		X													X
7	There is a gap of coordination implementations between the rules and policies with the real practical (BAR7).		X													X
8	Less budget allocations for food security problem. (BAR8)	X		X			X		X	X	X		X			X
9	Various sectors and players from various disciplines have distinct aims and priorities. Food security is not emphasized as a priority in other sectors (BAR9).	X						X					X			X
10	Inadequate human resources with the competency and specific understanding of food security (BAR10)	X	X	X	X			X	X	X						X
11	The capacity to deal with the issue of regional governance is restricted (BAR11).)															
12	Lack of management commitment at government level (BAR12)		X	X	X		X		X	X						
13	The leader's role in giving guidance and working fast to deal with the situation is adequate. One of the most important factors in generating the essential cooperation among partners is strong leadership. If the leader lacks good leadership abilities, coordination difficulties will arise (BAR13)			X X	X		X	X	X	X X	X	X				
14	The ability to communicate beliefs across stakeholders is a critical success component in the collaborative process. Coordination may be hampered by difficulties of trust among stakeholders (BAR14)	X		X				X								
15	Data integration is lacking. Data synchronization across offices, as well as differences in data analysis between manual and automated groups. These gaps have resulted in a failure to achieve the objectives and have also acted as a barrier to coordination. (BAR15)			X	X		X	X	X	X						

No.	Barriers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	Unintegrated priority program among various stakeholder (BAR16)			X	X		X	X								X
17	Coordination issues may arise if separate provinces or states are ruled by political parties other than those in authority at the national level, since each political party has its own priorities (BAR17).	X														
18	Accountability, like cooperation, is a virtue in the public sector. Strict financial and legal responsibility, on the other hand, may make collaboration more difficult. Coordination may be hampered if auditors are unable to trace money and parliament is unable to assign accountability for acts (BAR18)	X							X							
19	Lack of motivation to collaborate among stakeholders from various disciplines. It is due to a lack of understanding among stakeholders about the significance of coordination (BAR19)							X								X
20	One of the reasons of poor coordination is that groups have differing opinions about what constitutes effective policy and how to solve challenges (BAR20)	X														
21	Setting and executing goals, as well as just enabling groups to work together easily and successfully, are all aspects of coordination. Since the epidemic, the government's major objective has been to fight Covid-19, which implies stunting is no longer a key issue (BAR21)	X				X										
22	Coordination may take place via networks, particularly networks of career government workers. These networks do not need to be institutionalized; instead, they may emerge over time as a result of interactions among government officials who work together and know each other well enough to cooperate outside of official channels. Unfortunately, the opening of professional public services to outsiders as part of the New Public Management reforms has damaged these internal networks to some extent. (BAR22)	X			X		X	X		X						
23	Limitation authorities of Health sector or other certain sector that correlate to food security problem (BAR23)							X	X							
24	Inadequate controlling and monitoring system of coordination within each stakeholders (BAR24)						X		X		X	X				
25	Infrastructure that is critical for agricultural, nutrition, and health sector growth and improvement. In fragile nations, these components are weak or missing. Poor infrastructure continues to be a key impediment to growth and coordination with other sectors (BAR25)				X				X	X						
26	The inability of subnational governance to facilitate decentralized ownership to regional governments (BAR26)									X						X
27	The coordination system is intended to be used for a limited amount of time. It hasn't										X					X

No.	Barriers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	been planned as a continuous coordination system, and it hasn't been well-scheduled. (BAR27).)															

1. Peters (2018)
2. Vel et al (2016)
3. Candraweni and Rahayu (2020)
4. Zerbian and de Luis Romero (2021)
5. Smith, 2021
6. Sugihantono et al 2020)
7. Botero-Tovar e al (2020)
8. Khalid (2016)
9. Poole et al (2018)
10. Harris et al (2017)
11. Candel (2018)
12. Acosta and Haddad (2014)
13. Clapp and Moseley (2020)
14. Donovan and Gelli (2019)
15. Febrian and Yusran (2021)

Method of Research

Data Processing Technique

The data processing techniques used in this study include Content Validity Analysis, Interpretative Structural Modelling (ISM) Method, and Delphi Method. This study uses Content Validity Analysis to assess how well the factors correlate to or represent a barrier to public policy coordination in the face of food security in Central Java Province, and it employs quantitative tools to do so. This study employs empirical methodologies to construct the index of content validity (CVI), one of various content validity assessment methods (Zamanzadeh et al., 2015). The CVI is then calculated using Item-CVI in this study (I-CVI). Because the relevance of each item or factor to the barrier of public policy coordination is classified to a four-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = relevant, four = very relevant), the I-CVI is calculated as the number of experts who rate each item or factor as "relevant" or "very relevant" (a rating of 3 or 4) divided by the total number of experts. I-CVI values vary from 0 to 1; if the I-CVI value is > 0.79, the item or factor may be relevant; if the I-CVI value is between 0.70 and 0.79, the item or factor should be revised; and if the I-CVI value is below 0.70, the item or factor should be deleted (Zamanzadeh et al., 2015). For example, an item or factor with an I-CVI score of 0.80 would be deemed "relevant" or "extremely relevant" by four out of five assessors.

The second data processing methodology is the ISM method, which enables a complete knowledge (directly or indirectly) of the systematic structure of interaction between the barriers to public policy coordination in addressing the issue of food security. This research used the ISM approach because the high number of items or elements that operate as barriers to public policy coordination complicates and complicates the structure of a systematic model of the interaction between the barriers. Warfield (1994) and Sage (1997) described that ISM is a qualitative technique in which a collection of distinct but connected aspects is organized into a full systemic model. ISM is a suitable method for structuring a systematic model of the relationship between several factors in a variety of fields of study (see Saxena and Vrat, 1990; Mandal and Deshmukh, 1994; Singh et al., 2003; Ravi et al. 2005; Ravi and Shankar 2005; Huang et al. 2005; Kannan and Haq, 2007; Kannan et al. 2008; Kannan et al. 2009); and According to Mandal and Mandal and Deshmukh (1994) and Qureshi et al. (2007), ISM is an appropriate technique for recognizing and summarizing interactions between one item or factor and the other item or factors that describe an issue or problem; it provides a mechanism for a group to impose order on the complexity of the items or factors; and its modeling identifies the specific interactions and overall structure, which are depicted in a digraph model. According to Chauhan et al. (2018), the ISM technique for examining the systematic structure of the interaction between the obstacles to public policy coordination in addressing the issue of food security may be summarized as follows.

The Delphi Method is the final data processing approach for obtaining the most trustworthy consensus of a group of experts (Linstone & Turoff, 1975). The Delphi Method is employed in this research to get the most reliable consensus on an intervention to reduce the obstacles to public policy coordination in dealing with food security. The Delphi technique uses a mix of semi-structured and closed-ended surveys to reach a consensus, and it may take multiple rounds to conclude. In the first round, the Delphi Method will employ semi-structured questions to select numerous potential policies from a panel of experts. Closed-ended questions are utilized in the second and subsequent rounds based on the information from the first round. This questionnaire tries to measure the priority level of the proposed strategy by scoring or ranking it on a five-point Likert scale (1 = extremely ineffective, has a major negative impact, not reasonable to 5 = highly effective, has a substantial positive effect, very reasonable). The round of the Delphi Method will conclude when consensus is reached, and Kendal's W value shows that consensus. Kendal's W value ranges from 0 to 1. A strong consensus is defined by Kendall's W value of

more than 0.7; a moderate consensus is defined by Kendall's W value of 0.5; a weak consensus is defined by Kendall's W value of less than 0.3 (Habibi et al., 2014).

Respondent of the Research

According to Adler and Ziglio (1996), this research considers the following "expertise" criteria for selecting an expert panel as a participant or responder. The experts should have knowledge and expertise with the challenges; they should be able and eager to participate, have adequate time to participate, and have practical communication skills. Then, based on the six "expertise" requirements, the panel of experts who are participants or respondents of this research consists of: (i) Head of Fish Health and Environmental Testing Laboratory Center-Food Security Service of Central Java; (ii) representatives from Quality Analysis of Fishery Product; (iii) Food Security Junior Analyst; (iv) Staff Technical of Government and Social Culture; (v) representative from Regional Development Planning, Research and Development Agency of Central Java; and (vi) Staff of Public Health specialized in Family health Central Java and Sub-head of Agriculture & Maritime.

Result and Discussion

The Result of Content Validity Analysis

The result of the content validity analysis can be seen in Table 2. Finally, based on the value of I-CVI, this study used 22 factors as a barrier for coordination for food security in Central Java or excluded five factors as a barrier, i.e., BAR2, BAR6, BAR18, BAR23, and BAR27.

Table 2. Result of Content Validity Analysis for a Barriers of coordination for food security in Central Java

Barrier Factors	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
BAR1	1	1	1	1	1	0	5	0,83
BAR2	0	1	1	1	1	0	4	0,67
BAR3	1	1	1	0	1	1	5	0,83
BAR4	1	1	1	1	1	1	6	1,00
BAR5	1	1	0	1	1	1	5	0,83
BAR6	1	1	0	0	1	0	3	0,50
BAR7	1	1	1	1	1	1	6	1,00
BAR8	1	1	1	1	0	1	5	0,83
BAR9	1	1	1	1	1	1	6	1,00
BAR10	1	1	0	1	1	1	5	0,83
BAR11	1	1	1	1	1	1	6	1,00
BAR12	1	1	0	1	1	1	5	0,83
BAR13	1	1	1	1	1	1	6	1,00
BAR14	1	1	1	1	1	1	6	1,00
BAR15	1	1	1	1	1	1	6	1,00
BAR16	1	1	1	1	1	1	6	1,00
BAR17	1	1	1	1	1	0	5	0,83
BAR18	1	1	0	1	0	1	4	0,67
BAR19	1	1	1	1	1	1	6	1,00
BAR20	1	1	1	1	1	1	6	1,00
BAR21	1	1	1	1	0	1	5	0,83
BAR22	1	1	1	1	1	1	6	1,00
BAR23	1	1	1	1	0	1	5	0,83
BAR24	1	1	1	1	1	1	6	1,00
BAR25	1	1	1	1	1	1	6	1,00
BAR26	1	1	1	1	1	1	6	1,00
BAR27	1	1	1	1	0	0	4	0,67
	0,96	1,00	0,81	0,93	0,81	0,81	S-CVI/Ave	0,89

Average proportion of items judged as relevance across the six experts

The new list of barriers of coordination for food security in Central Java, the final symbol used for the following data processing was:

(1). Food resolution of food security issues are not in the hands of a single player and will not be resolved by simply owns or sector actors. It is such a complicated problem (B1)

(2). Lack of communication and specialization in multisector collaboration makes it more vulnerable and difficult to be on the same page due to different disciplines and mandates, guiding principles, visions, and interests. (B2)

(3). Insufficient sharing of information because many organizations perform to horde information. (B3)

(4). Ambiguities and lack of clarity surrounding authority over setting policy directions and making decisions in a (legal-) normative manner (B4)

(5). The gap of coordination implementations between the rules and policies with the real practice. (B5)

(6). Fewer Budget allocations for food security problems. (B6)

(7). Different aims and priorities among multiple sectors and actors from different disciplines (sometimes, in another sector, they have not prioritized food security as their problem) (B7)

(8). Inadequate human resources with the competency and specific understanding of food security (B8)

(9). Limited the capability to handle the problem of regional Government. (B9)

(10). Lack of management commitment at the government level. (B10)

(11). Lack of the leader's role in giving guidance and working fast to deal with the situation (B11)

(12). Lack of shared beliefs among the stakeholders. Trust issues among stakeholders can be obstacles to coordination. (B12)

(13). Data is not well integrated (B13)

(14). Unintegrated priority program among various stakeholders. (B14)

(15). Some political parties, unfortunately, control several regions with their agenda and interest. (B15)

(16). Lack of motivation to collaborate among stakeholders from various disciplines (B16)

(17). Organizations have different ideas about what constitutes effective policy and how to solve challenges. (B17)

(18). Food security does not occupy the top priority of the Government as their current focus is to fight Covid-19 (B18)

(19). Less unformalized networks that bring a closer tie has more potential to work in a more flexible channel (B19)

(20). Inadequate controlling and monitoring system of coordination within each stakeholder. (B20)

(21). Weak infrastructure is essential as a key impediment to growth and coordination with other sectors. (B21)

(22). The inability of subnational governance to facilitate decentralized ownership to regional governments (B22)

The Result of Interpretative Structural Modelling

Tables 3 and 8 displayed the Structural Self-Interaction Matrix (SSIM) based on expert 1 through expert 6. The following section shows how to use the symbols V, A, X, and O in SSIM. The V sign represents that I influences j, but j does not have power over i. The A symbol represents that the j influences i, but i does not influence j, the O symbol represents that the i and j do not have any links, but if the X symbol is indicated that i has control over j and j also has influence over I (see table 3-8).

Table 3. ISSM from Expert 1

Expert 1

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	X	X	A	A	O	X	X	A	O	A	X	X	V	A	A	X	A	X	X	A	X	
2i	V	O	V	V	O	V	O	A	V	V	V	A	V	O	O	V	O	V	X	V		
3i	X	V	A	A	O	A	X	O	V	V	X	A	X	A	O	A	O	V	X			
4i	V	V	O	V	O	V	V	O	V	O	V	X	V	X	X	V	V	V				
5i	A	A	A	A	O	A	A	A	A	A	A	A	A	X	A	A	A					
6i	O	V	O	O	A	O	O	A	A	O	O	O	A	V	V	A						
7i	A	V	O	O	A	O	O	A	V	V	O	O	V	O	V							
8i	A	O	O	O	O	O	O	O	O	V	O	O	A	O								
9i	O	O	O	O	A	O	O	O	O	A	O	X	V									
10i	A	V	V	V	O	A	V	A	O	V	V	A										
11i	A	V	V	V	O	V	V	O	O	V	V											
12i	V	O	X	X	V	X	X	A	X	X												
13i	A	V	A	A	O	A	A	O	A													
14i	A	V	A	A	A	A	A	A														
15i	A	O	O	O	V	O	O															
16i	X	O	V	X	O	X																
17i	O	O	A	A	O																	
18i	O	O	O	V																		
19i	A	O	A																			
20i	A	O																				
21i	A																					
22i																						

Table 4. ISSM from Expert 2

Expert 2

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	O	A	O	O	O	O	O	O	X	X	O	O	X	O	O	O	O	O	O			
2i	O	O	X	X	O	X	X	O	X	X	O	O	O	O	O	X	O	O	X	X		
3i	O	X	X	X	O	O	X	O	X	X	O	O	O	O	O	X	O	X	O			
4i	O	A	A	A	O	A	A	A	A	A	A	A	A	A	A	A	A	A				
5i	A	A	A	A	O	A	A	A	A	A	A	A	A	A	A	A	A					
6i	A	O	O	A	A	A	O	A	O	O	O	A	A	A	O	A						
7i	A	O	O	O	O	A	O	A	O	O	O	O	A	O	O							
8i	V	A	V	A	O	V	V	O	V	A	V	V	V	O								
9i	V	V	V	V	O	O	O	O	V	V	V	A	V									
10i	A	A	A	X	X	X	X	X	X	X	X	X										
11i	V	O	V	V	O	V	X	O	X	A	V											
12i	V	O	O	X	O	X	X	O	O	V												
13i	O	X	X	X	O	O	O	O	V													
14i	A	A	A	A	A	A	A	A														
15i	A	O	O	A	O	O	X															
16i	A	A	A	A	O	X																
17i	A	O	A	A	O																	
18i	O	O	O	O																		
19i	A	A	A																			
20i	A	A																				
21i	O																					
22i																						

Table 5. ISSM from Expert 3

Expert 3

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	O	A	A	A	X	A	A	O	X	A	A	A	A	A	A	V	A	X	A	A	O	
2i	X	V	O	V	O	V	O	O	O	O	O	O	O	V	O	V	V	X	V	O		
3i	A	V	A	A	X	V	A	O	V	V	V	A	A	A	A	V	V	A	A			
4i	A	V	V	A	X	A	A	A	O	V	A	A	A	A	A	A	V	V	A			
5i	X	A	V	A	V	V	V	O	O	V	V	O	V	V	A	A	V	V				
6i	A	V	V	A	X	A	X	O	O	A	O	O	A	A	A	O	V					
7i	A	V	A	A	A	A	A	O	O	A	A	O	A	A	O	A	O					
8i	V	V	V	V	V	V	V	O	V	V	V	A	O	V								
9i	V	V	A	A	V	A	A	O	O	V	O	O	O									
10i	A	V	A	A	X	A	V	O	A	A	V	A										
11i	V	V	A	V	V	V	V	O	V	A	V											
12i	O	A	A	A	V	A	V	O	O	A												
13i	X	A	A	A	V	A	A	O	V													
14i	X	A	A	A	V	A	A	O														
15i	X	V	O	O	V	O	O															
16i	A	X	A	V	V	O																
17i	X	O	A	A	V																	
18i	O	V	O	O																		
19i	V	A	V																			
20i	V	A																				
21i	X																					
22i																						

Table 6. ISSM from Expert 4

Expert 4

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	A	O	O	X	O	O	O	O	O	A	O	O	A	A	O	O	D	A	O	O	A	
2i	O	O	O	O	X	O	O	O	O	O	O	X	O	O	X	O	O	O	O	X	O	O
3i	O	O	O	O	X	O	O	O	O	O	X	O	O	X	O	O	O	O	O	X	O	
4i	O	O	O	O	O	O	O	O	O	O	X	O	O	O	O	O	O	O	O	X		
5i	O	O	O	X	X	O	O	O	O	O	O	O	O	X	O	O	O	O				
6i	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O					
7i	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O						
8i	O	O	O	O	O	O	O	O	O	O	O	O	O	V	V							
9i	O	O	O	O	O	O	O	O	O	O	O	O	O	O								
10i	O	O	O	O	O	O	O	O	O	O	O	O	O									
11i	O	O	O	A	O	O	O	O	O	O	O	O										
12i	O	O	O	O	O	O	O	O	O	O	O											
13i	O	O	O	O	O	O	O	O	O	O												
14i	O	O	O	X	O	O	O	O	O													
15i	O	O	O	O	O	O	O	O														
16i	O	O	O	A	O	O	O															
17i	O	O	O	A	O																	
18i	O	O	O	X																		
19i	O	O	O																			
20i	O	O																				
21i	O																					
22i																						

Table 7. ISSM from Expert 5

Expert 5

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	X	A	X	V	O	X	X	A	X	X	X	X	A	X	A	X	X	X				
2i	X	A	V	X	O	X	X	O	X	A	X	A	X	X	O	X	X	V	V			
3i	X	X	X	X	O	X	X	O	X	A	X	A	X	X	A	X	X	X				
4i	V	A	V	X	O	A	A	O	X	A	X	A	A	X	A	A	X					
5i	X	A	V	X	X	X	X	A	X	A	X	X	X	X	X	X						
6i	X	X	V	V	X	V	X	A	X	V	X	X	X	X	X							
7i	X	X	X	X	O	V	X	A	X	X	X	X	X	A	A							
8i	X	A	V	V	O	X	X	O	V	X	X	X	X	X								
9i	X	X	V	X	X	X	X	O	X	X	V	A	X									
10i	A	X	X	X	O	X	X	A	X	X	X	A										
11i	V	A	X	X	O	X	X	A	X	X	X											
12i	X	A	X	X	O	X	X	A	X	X												
13i	V	A	X	X	X	A	X	A	X													
14i	X	X	V	X	A	X	X	A														
15i	V	V	V	V	X	X	X															
16i	V	X	X	X	X	V																
17i	X	X	X	X	V																	
18i	O	X	V	O																		
19i	V	X	X																			
20i	X	X																				
21i	V																					
22i																						

Table 8. ISSM from Expert 6

Expert 6

No.	22j	21j	20j	19j	18j	17j	16j	15j	14j	13j	12j	11j	10j	9j	8j	7j	6j	5j	4j	3j	2j	1j
1i	X	A	X	X	D	X	X	A	X	X	X	X	A	X	A	X	X	X	X	X		
2i	X	A	V	X	D	X	X	D	X	D	X	A	X	A	X	X	D	X	X	X	X	V
3i	X	X	X	X	D	X	X	D	X	D	X	A	X	A	X	X	A	X	X	A	X	
4i	V	A	V	V	D	A	A	D	X	A	X	A	A	X	A	X	A	A	X			
5i	X	A	V	X	X	X	X	A	X	A	V	X	X	X	A	X	X					
6i	X	X	V	V	X	V	X	A	X	V	X	X	X	X	X	X						
7i	X	X	X	X	D	V	X	D	X	X	X	X	X	A	A							
8i	X	A	A	V	D	X	X	D	V	X	X	X	X	X								
9i	V	X	V	X	D	X	X	A	X	X	V	X	V									
10i	A	X	V	X	D	X	X	A	X	X	X	A										
11i	V	A	X	X	D	X	A	A	X	X	V											
12i	X	A	X	X	D	A	X	V	X	X												
13i	V	A	X	X	X	X	X	A	X													
14i	X	X	X	X	A	X	X	A														
15i	V	X	V	V	X	V	X															
16i	V	X	X	X	X	X																
17i	V	X	X	X	V																	
18i	O	V	V	O																		
19i	V	X	X																			
20i	X	V																				
21i	V																					
22i																						

Based on each SSIM (Tables 3–8), we translate the information in each SSIM cell into binary integers to build the initial reachability matrix (i.e., ones or zeros). In this case, if the input in cell '(i, j)' in SSIM is V, then the cell '(i, j)' input becomes 1, and the cell '(j, i)' input becomes 0. If the input in cell '(i, j)' in SSIM is A, then the cell '(i, j)' input becomes 0, and the cell '(j, i)' input becomes 1 in the initial reachability matrix. If the input in cell '(i, j)' in SSIM is X, then the inputs in both cells '(i, j)' and '(j, i)' become 1 in the initial reachability matrix. If the input in cell (i, j) in SSIM is O, then the inputs in both cells '(i, j)' and '(j, i)' become 0 in the initial reachability matrix. With six SSIM from six experts, the single value (ones or zeros) to include in the combined initial reachability matrix is determined by either the consensus from six experts (if achieved) or by majority opinion on the paired comparison of the barriers. According to Malone (1975), Watson (1978), Broome et al. (2002), and Sushil (2012), if consensus is difficult to achieve, the process of aggregating the value is based on the majority view may be used. The combined initial reachability matrix is shown in Table 9. The final reachability matrix for the Coordination barrier for Food Security is shown in Table 10, after adding the transitivity process to the combined beginning reachability matrix. If barrier A is connected to barrier B and B to barrier C, then barrier A should be connected to barrier C throughout the transitivity process. The sign * denotes transitivity.

Table 9. Combined initial reachability matrix

Barriers	B1j	B2j	B3j	B4j	B5j	B6j	B7j	B8j	B9j	B10j	B11j	B12j	B13j	B14j	B15j	B16j	B17j	B18j	B19j	B20j	B21j	B22j
B1i	1	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
B2i	0	1	1	1	1	0	1	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1
B3i	1	0	1	0	1	0	1	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0
B4i	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
B5i	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B6i	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
B7i	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
B8i	1	0	0	1	1	0	0	1	0	0	0	1	1	1	0	1	1	0	0	1	0	1
B9i	1	0	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1	1
B10i	1	0	1	1	1	1	0	0	0	1	0	1	1	0	0	1	0	1	1	0	1	0
B11i	1	0	1	1	1	0	0	0	1	1	1	1	0	1	0	1	1	0	1	1	1	1
B12i	1	0	0	1	1	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	1
B13i	1	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	1	0
B14i	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
B15i	0	0	0	0	1	1	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0
B16i	1	0	1	1	1	0	0	0	0	0	0	1	1	1	0	1	1	0	1	0	0	0
B17i	1	0	0	1	1	1	1	0	0	1	0	1	1	1	0	1	1	0	0	0	0	0
B18i	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0
B19i	1	0	1	1	1	1	0	0	0	1	0	1	1	1	0	1	1	0	1	0	0	0
B20i	1	0	1	0	1	0	0	0	0	1	0	1	1	1	0	1	1	0	1	1	0	0
B21i	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	0
B22i	0	0	1	0	1	1	1	0	0	1	0	0	1	1	1	1	1	0	1	1	1	1

Table 10. Combined Final Reachability Matrix

No.	B1j	B2j	B3j	B4j	B5j	B6j	B7j	B8j	B9j	B10j	B11j	B12j	B13j	B14j	B15j	B16j	B17j	B18j	B19j	B20j	B21j	B22j	driving power
B1i	1	0	1*	1*	1	1*	1	0	0	1	0	1*	1*	1	0	1*	0	1*	1*	0	1*	0	14
B2i	1*	1	1	1	1	1*	1	0	0	1*	1*	1*	1	1	1*	1*	1	0	1	1	1*	1	19
B3i	1	0	1	1*	1	1*	1	0	0	1*	1*	1	1	1	0	1	1*	1*	1*	1*	1	1*	18
B4i	1	1	1	1	1*	1	1	0	0	1*	0	1*	1*	1	0	1*	1*	0	1*	1*	1	1*	17
B5i	1	1*	1	1	1	1*	1*	0	0	1*	0	1*	1*	1*	0	1*	0	0	0	0	1*	0	13
B6i	1	0	1*	1*	1	1	1*	0	0	1*	0	0	0	1*	0	1*	0	0	1*	1*	1	0	12
B7i	1*	0	1	1*	1	1	1	0	0	0	0	1*	1*	1*	0	1*	0	0	1*	1*	1	0	13
B8i	1	0	1*	1	1	1*	1*	1	0	1*	1*	1	1	1	1*	1	1	1*	1*	1	1*	1	20
B9i	1	1*	1	1	1	1	1*	0	1	1	1*	1*	1	1*	1*	1*	1*	1*	1*	1*	1	1	21
B10i	1	1*	1	1	1	1	1*	0	0	1	1*	1	1	1*	0	1	1*	1	1	1*	1	1*	19
B11i	1	1*	1	1	1	1*	1*	0	1	1	1	1	1*	1	1*	1	1	1*	1	1	1	1	21
B12i	1	1*	1*	1	1	1*	1*	0	0	1*	1*	1	1	1*	1*	1	1	1	1	1*	1*	1	20
B13i	1	1*	1*	1	1	1*	1*	0	1*	1	1	1	1	1	0	1*	1*	1*	1*	1*	1	1*	20
B14i	1	0	1*	1*	1	1*	1*	0	0	1	0	1*	1*	1	0	1*	0	1*	1*	0	1*	0	14
B15i	1*	0	1*	1*	1	1	1	0	0	1	0	1*	1*	1	1	1*	0	1	1*	0	1*	0	15
B16i	1	1*	1	1	1	1*	1*	0	0	1*	1*	1	1	1	0	1	1	1*	1	0	1*	1*	18
B17i	1	1*	1*	1	1	1	1	0	0	1	1*	1	1	1	0	1	1	1*	1*	0	1*	1*	18
B18i	1*	0	1*	1*	1*	1	1	0	0	1	0	1*	1*	1	0	1*	0	1	1*	0	1*	0	14
B19i	1	1*	1	1	1	1	1*	0	0	1	1*	1	1	1	0	1	1	1*	1	0	1*	1*	18
B20i	1	0	1	1*	1	1*	1*	0	0	1	1*	1	1	1	0	1	1	1*	1	1	1*	1*	18
B21i	1	0	1*	1*	1	1*	1*	0	0	1*	1*	1*	1	1	0	1	1*	0	1	1	1	0	16
B22i	1*	0	1	1*	1	1	1	0	0	1	1*	1*	1	1	1	1	1	1*	1	1	1	1	18
dependence power	22	11	22	22	22	22	22	1	3	21	14	21	21	22	7	22	15	16	21	14	22	14	

The partitioning of the levels is determined by the construction of the combined final reachability matrix. Warfield (1974) suggests that the final reachability matrix may be used to determine each component's reachability set and antecedent set. The reachability value assigned to a particular barrier considers both the barrier itself and any extra barriers that it may aid in overcoming. Similarly, the antecedent set for a particular barrier comprises the barrier itself and other impediments that help its removal. The intersection of the reachability and antecedent sets is then determined. In the ISM hierarchy, the top-level factor is assigned to the factor for which the reachability and intersection sets are equivalent and for which achieving any other factor beyond their level would be impossible. After identifying the top-level factor, it is segregated from the other components. Table 11 lists the 22 obstacles

and their reachability set, antecedent set, intersection set, and level. The level partitioning is complete after nine rounds.

Table 11. Level Partitions for the Barrier of Coordination for Food Security

Iteration	Variable	*Reachability set*	*Antecedent set*	*Intersection set*
I	1	1j,3j,4j,5j,6j,7j,10j,12j,13j,14j,16j,18j,19j,21j	1i,2i,3i,4i,5i,6i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,3ij,4ij,5ij,6ij,7ij,10ij,12ij,13ij,14ij,16ij,18ij,19ij,21ij
	2	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,15j,16j,17j,19j,20j,21j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,4ij,5ij,10ij,11ij,12ij,13ij,16ij,17ij,19ij
	8	1j, 2j, 3j, 5j, 6j, 7j, 8j, 9j, 10j, 14j, 15j	8i	8ij
	9	1j,2j,3j,4j,5j,6j,7j,9j,10j,11j,12j,13j,14j,15j,16j,17j,18j,19j,20j,21j,22j	9i,11i,13i	9ij,11ij,13ij
	10	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,20j,21j,22j	1i,2i,3i,4i,5i,6i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,2ij,3ij,4ij,5ij,6ij,10ij,11ij,12ij,13ij,14ij,16ij,17ij,18ijj,19ij,20ij,21ij,22ij,
	11	1j,2j,3j,4j,5j,6j,7j,9j,10j,11j,12j,13j,14j,15j,16j,17j,18j,19j,20j,21j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,20i,21i,22i	2ij,3ij,9ij,10ij,11ij,12ij,13ij,16ij,17ij,19ij,20ij,21ij,22ij
	12	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,15j,16j,17j,18j,19j,20j,21j,22j	1i,2i,3i,4i,5i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,2ij,3ij,4ij,5ij,7ij,10ij,11ij,12ij,13ij,14ij,15ij,16ij,17ij,18ij,19ij,20ij,21ij,22ij
	13	1j,2j,3j,4j,5j,6j,7j,9j,10j,11j,12j,13j,14j,16j,17j,18j,19j,20j,21j,22j	1i,2i,3i,4i,5i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,2ij,3ij,4ij,5ij,7ij,9ij,10ij,11ij,12ij,13ij,14ij,16ij,17ij,18ij,19ij,20ij,21ij,22ij
	14	1j,3j,4j,5j,6j,7j,10j,12j,13j,14j,16j,18j,19j,21j	1i,2i,3i,4i,5i,6i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,3ij,4ij,5ij,6ij,7ij,10ij,12ij,13ij,14ij,16ij,18ij,19ij,21ij
	15	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,21j,22j	2i,8i,9i,11i,12i,15i,22i	2ij,11ij,12ij,22ij
	16	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,21j,22j	1i,2i,3i,4i,5i,6i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,2ij,3ij,4ij,5ij,6ij,7ij,10ij,11ij,12ij,13ij,14ij,16ij,17ij,18ij,19ij,21ij,22ij
	17	1j2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,21j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i17i,19i,20i,21i,22i	2ij,3ij,4ij,10ij,11ij,12ij,13ij,16ij,17ij,19ij,21ij,22ij
	18	1j,3j,4j,5j,6j,7j,10j,12j,13j,14j,16j,18j,19j,21j	1i,3i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,22i	1ij,3ij,10ij,12ij,13ij,14ij,16ij,18ij,19ij
	19	1j,2j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,21j,22j,	1i,2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,2ij,3ij,4ij,6ij,7ij,10ij,11ij,12ij,13ij,14ij,16ij,17ij,18ij,19ij,21ij,22ij
	20	1j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,18j,19j,20j,21j,22j	2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,20i,21i,22i,	3ij,4ij,6ij,7ij,10ij,11ij,12ij,13ij,20ij,21ij,22ij
	21	1j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,16j,17j,19j,20j,21j	1i,2i,3i,4i,5i,6i,7i,8i,9i,10i,11i,12i,13i,14i,15i,16i,17i,18i,19i,20i,21i,22i,	1ij,3ij,4ij,5ij,6ij,7ij,10ij,11ij,12ij,13ij,14ij,16ij,17ij,19ij,20ij,21ij
	22	1j,3j,4j,5j,6j,7j,10j,11j,12j,13j,14j,15j,16j,17j,18j,19j,20j,21j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i,20i,22i	3ij,4ij,10ij,11ij,12ij,13ij,16ij,17ij,19ij,20ij,22ij
II	2	2j,10j,11j,12j,13j,14j,15j,17j,19j,20j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,10ij,11ij,12ij,13ij,17ij,19ij
	8	2j, 8j, 9j, 10j, 14j, 15j	8i	8ij
	9	2j,9j,10j,11j,12j,13j,14j,15j,17j,18j,19j,20j,22j	9i,11i,13i	9ij,11ij,13ij
	11	2j,9j,10j,11j,12j,13j,14j,15j,17j,18j,19j,20j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,20i,21i,22i	2ij,9ij,10ij,11ij,12ij,13ij,17ij,19ij,20ij,22ij
	12	2j,10j,11j,12j,13j,14j,15j,17j,18j,19j	1i,2i,3i,	2ij,10ij,11ij,12ij,13ij,14ij,15ij,17ij,18ij,19ij,20i
	15	2j,10j,11j,12j,13j,14j,17j,18j,19j,22j	2i,8i,9i,11i,12i,15i,22i	2ij,11ij,12ij,22ij

Iteration	Variable	*Reachability set*	*Antecedent set*	*Intersection set*
	17	2j,10j,11j,12j,13j,14j,17j,18j,19j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i17i,19i, 20i,21i,22i	2ij,10ij,11ij,12ij,13ij,17ij,19ij,22ij
	18	10j,12j,13j,14j,18j,19j	[illegible] 7i,18i,19i,20i,22i	10ij,12ij,13ij,14ij,18ij,19ij
	19	2j,10j,11j,12j,13j,14j,17j,18j,19j,22j ,	1i,2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,14i, 15i,16i,17i,18i,19i,20i,21i,22i,	2ij,10ij,11ij,12ij,13ij,14ij,17ij,18ij,19ij,22ij
	20	10j,11j,12j,13j,14j,17j,18j,19j,20j,2 2j	2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,20i,2 1i,22i,	10ij,11ij,12ij,13ij,20ij,22ij
	22	10j,11j,12j,13j,14j,15j,17j,18j,19j,2 0j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i ,20i,22i	10ij,11ij,12ij,13ij,17ij,19ij,20ij,22ij
	2	2j,11j,15j,17j,20j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,11ij,17ij
	8	2j, 8j, 9j,15j	8i	8ij
	9	2j,9j,11j,15j,17j,18j,20j,22j	9i,11i,13i	9ij,11ij
	11	2j,9j,11j,15j,17j,18j,20j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,2 0i,21i,22i	2ij,9ij,11ij,17ij,20ij,22ij
III	15	2j,11j,17j,18j,22j	2i,8i,9i,11i,12i,15i,22i	2ij,11ij,22ij
	17	2j,11j,17j,18j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i17i,19i, 20i,21i,22i	2ij,11ij,17ij,22ij
	18	18j	1i,3i,8i,9i,10i,11i,12i,13i,14i,15i,16i,1 7i,18i,19i,20i,22i	18ij
	20	11j,17j,18j,20j,22j	2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,20i,2 1i,22i,	11ij, 20ij,22ij
	22	11j,15j,17j,18j,20j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i ,20i,22i	11ij,17ij,20ij,22ij
	2	2j,11j,15j,17j,20j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,11ij,17ij
	8	2j, 8j, 9j,15j	8i	8ij
	9	2j,9j,11j,15j,17j,20j,22j	9i,11i,13i	9ij,11ij
	11	2j,9j,11j,15j,17j,20j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,2 0i,21i,22i	2ij,9ij,11ij,17ij,20ij,22ij
IV	15	2j,11j,17j,22j	2i,8i,9i,11i,12i,15i,22i	2ij,11ij,22ij
	17	2j,11j,17j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i17i,19i, 20i,21i,22i	2ij,11ij,17ij,22ij
	20	11j,17j,20j,22j	2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,20i,2 1i,22i,	11ij,20ij,22ij
	22	11j,15j,17j,20j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i ,20i,22i	11ij,17ij,20ij,22ij
	2	2j,11j,15j,20j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,11ij,
	8	2j, 8j, 9j,15j	8i	8ij
	9	2j,9j,11j,15j,20j,22j	9i,11i,13i	9ij,11ij
	11	2j,9j,11j,15j,20j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,2 0i,21i,22i	2ij,9ij,11ij,20ij,22ij
V	15	2j,11j,22j	2i,8i,9i,11i,12i,15i,22i	2ij,11ij,22ij
	20	11j,20j,22j	2i,3i,4i,6i,7i,8i,9i,10i,11i,12i,13i,20i,2 1i,22i,	11ij,20ij,22ij
	22	11j,15j,20j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i ,20i,22i	11ij,20ij,22ij
	2	2j,11j,22j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij,11ij
	8	2j, 8j, 9j	8i	8ij
	9	2j,9j,11j,22j	9i,11i,13i	9ij,11ij
VI	11	2j,9j,11j,22j	2i,3i,8i,9i,10i,11i,12i,13i,16i,17i,19i,2 0i,21i,22i	2ij,9ij,11ij,22ij
	22	11j,22j	2i,3i,4i,8i,9i,10i,11i,12i,13i,16i,17i,19i ,20i,22i	11ij,22ij
	2	2j	2i,4i,5i,9i,10i,11i,12i,13i,16i,17i,19i'	2ij
VII	8	2j, 8j, 9j	8i	8ij
	9	2j,9j	9i,11i,13i	9ij
VIII	8	8j, 9j	8i	8ij
	9	9j	9i,11i,13i	9ij
IX	8	8j	8i	8ij

As seen in Table 11, six barriers have the same reachability set as an intersection set in the first iteration. Those barriers are B1 (complicated problem), B3 (insufficient sharing of information), B4 (ambiguities and lack of clarity), B5 (gap of coordination implementations between the rules and policies with the real practical), B6

(fewer Budget allocations for food security problems), B7 (different aims and priorities. among multiple sectors and actors from different disciplines), B16 (lack of motivation to collaborate among stakeholders from various disciplines), and B21 (weak of infrastructure which is essential as a key impediment to growth and coordination with other sectors). Those barriers are occupied in Level I or the top of the ISM hierarchy based on this condition. Those barriers are followed B10 (lack of management commitment at government level), B12 (lack of share beliefs among the stakeholders), B13 (data is not well integrated), B14 (unintegrated priority program among various stakeholders), and B19 (less of unformalized networks for coordination outside of official channels). B10, B12, B13, B14, and B19 are placed at the barrier in Level II. Thus, barrier B18 (food security does not occupy the Government's top priority as their current focus is to fight Covid-19) is placed at the barrier in Level III. Barrier B17 (organizations have different ideas about what constitutes effective policy and how to solve challenges) is placed at the barrier in Level IV. Then, barrier B15 (different provinces or states are controlled by political parties with their concerns) and B20 (inadequate controlling and monitoring system of coordination within each stakeholder) are placed at the barrier in Level VI. At Level VII, VIII, and IX, we can see the barrier B2 (lack of communication and specialization in multisector collaboration), B9 (limited capability to handle the problem of regional Government), and B8 (inadequate human resources with the competency and specific understanding of food security), successively. The final model of ISM based on the level of partitioning is given in Figure 1. The relationship between barriers i and j is described by an arrow directed from i to j. The resulting graph is called a digraph. Removing the transitivity described in the ISM methodology, the digraph is finally converted into the ISM model (see Figure 1).

From Figure 1, we can see that inadequate human resources with the competency and specific understanding of food security (B8) are a significant barrier to public policy coordination in handling food security. This barrier will influence the limited capability of the regional Government to handle the problem (B9), and then, the limited capability can cause a lack of communication and specialization in multisector collaboration (B2). Both barriers (limited capability and lack of communication and specialization) and lack of leader's role in giving guidance and working fast to deal with the situation can cause the inability of sub-national governance to facilitate decentralized ownership to regional governments (B22).

The barrier is then divided into four quadrants using Matrice d'Impacts Croises-Multiplication Applique, or MICMAC analysis. MICMAC analysis is an indirect classification approach based on each factor's driving power and dependence (Mandal and Deshmukh, 1994; Ravi et al., 2005). The MICMAC analysis assists in determining the breadth of each element. Table 9 (final combined reachability matrix) demonstrates that the driving power and dependence are achieved by inserting a binary number "1" into the relevant row and column for each barrier to public policy coordination. Each barrier's driving power and dependency may then be represented as a simple scatter plot, as illustrated in Figure 2. "Autonomous barriers" are denoted by the first quadrant. Barriers in this quadrant have low dependence and driving power. Because they have few weak linkages with other barriers, barriers in this quadrant are largely detached from the system. The second quadrant denotes the "dependent barriers." Barriers in this quadrant have a high degree of dependence but a low degree of driving power. "Linkage barriers" are denoted by the third quadrant. Barriers have a high degree of dependency and driving power in this quadrant. These barriers are unstable since each action affects other barriers and has a negative feedback loop. Finally, the fourth quadrant represents "independent barriers." Barriers in this quadrant have a low dependence and a high driving power (see Figure 2).

Figure 1. ISM Digraph

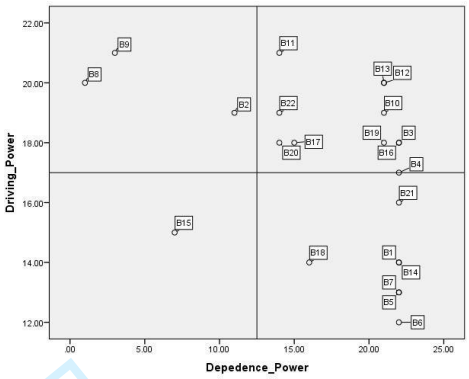

Figure 2. Driving Power and Dependence Power Diagram

The result of mapping the dependence and driving power of each barrier in Figure 2 indicates the following:

- No barriers fall in the autonomous and dependent barriers quadrant
- Four barriers fall in the independent barriers: B2, B8, B9, and B15
- Most barriers or Eighteen barriers fall in linkage barrier: B1, B3, B4, B5, B6, B7, B9, B10, B11, B12, B13, B14, B16, B17, B18, B19, B20, B21, B22.

Policy Recommendation based on Delphi Method

In this study, two rounds of the Delphi method were used to formulate the proposed policies to mitigate three significant barriers of public policy coordination in handling food security as it occupies the top three the base of ISM Digraph. In this case, the proposed policies were used to mitigate barriers B8, B9, and B2. The summary of proposed policies for each barrier as the result of the first round of the Delphi method can be seen in Table 12.

Table 12. The Summary of Proposed Policies from Six Experts- First Round of Delphi Method

Barrier	Proposed Policies
Inadequate human resources with the competency and specific understanding of food security (B8)	(1). **Develop capacity building** of human resource through education/training, not only for the public employee who have responsibility in handling the food security program but also for the non-government stakeholder (such as university, community, and the other actor) to strengthen their role as non-government agency for food security. (PB81) (2). **Build the formal media** (such as a regular email or magazine) for dissemination of knowledge and technology in the food sector, as well as food security and counseling (PB82) (3). **Develop standards of human resource competence in dealing** with food insecurity concerns, managing complex information systems and performing multi-sectoral analyses, building and implementing information systems that measure and monitor food insecurity and vulnerability (PB83)
Limited capability of regional government to handle the problem (B9)	(1). **Build institutional arrangements related to the distribution of authority, the protocol, procedure, and structure organization to manage multiple actors related to food security program;** such as give the village government a clear guidance in making programs and

Barrier	Proposed Policies
	activities to handle food insecurity and this must be legalized in village meetings (food insecurity programs should be more focused on preventing stunting in villages because most of the problems are in the village) (PB91) (2). **Build clear procedures that regulate accountability and penalties for instances** where local governments fail to respond to food insecurity incidence otherwise to ensure food security (PB92) (3). **Strengthening policy of decentralization and regional autonomy**, the decision making in state governing and in the provision of public services is expected to become simpler and speedier, because it can be executed by the closest regional government in accordance with the existing authority (PB93)
Lack of communication and specialization in multisector collaboration (B2)	(1). **Develop technical and standard operating procedure for effective intersectoral and cross-ministerial linkages** to promote the coordination (starting from setting priorities by all stakeholders, planning process, funding allocation until implementing program) (PB21) (2). **Clarity the current coordinating body in developing strategic policy for food and nutrition** (RAN-PG and STANAS Stunting) that facilitates cooperation across ministries and sectors and establish linkages between the national plan and sectoral plans, including the broader development framework and strategy of the country (PB22) **(3). Build a of compatibility (periodicity, spatial coverage, sample selection, selection of indicators and storage and data management) that would facilitate use by other sectors and share knowledge about available data or information to avoid frequent duplication of data collection and analysis efforts as well as waste of resources (PB23).** It can be done by using the Whole-of-Government Account which consolidates more than 5500 agency accounts in the public sector to promote sharing of data collection tasks and information as well as transparency and accountability. In this case, the WGA provides convenience for the public or certain stakeholders in accessing financial reports and understanding the financial position at a macro level. This facilitates access to information between sectors so that the knowledge or knowledge possessed by inter-stakeholders is aligned. Additionally, by using WGA, the emphasis of information gathering and analysis may be shifted away from the particular sectoral or subpectoral unit's objectives and toward generating possible efficiencies via the consolidation or rationalization of disparate information systems. **(4). Develop technical and standard operating procedure for sharing responsibilities and strengthening collaboration and communication (PB24)** **(5). Develop a common vision and orientation of each involved sector** that can reduce competition or competition between sectors (PB25)

The second round was then conducted using closed-ended questions based on the recommended policies acquired in the previous round. Table 13 contains the results of the second round.

Table 13. Second Rounds of the Delphi method

Comment [i-[4]: There should be linking similar research to this study, where the outputs are relevance, consistency, and differences in findings.

Proposed Policies	Expert						Mean
	1	2	3	4	5	6	
PB81	5	4	4	5	4	4	4,33
PB82	5	4	4	5	5	5	4,67
PB83	4	5	5	5	5	4	4,67
PB91	5	5	5	5	5	5	5,00
PB92	4	5	4	5	5	5	4,67
PB93	5	5	5	5	5	5	5,00
PB21	5	5	5	5	5	5	5,00
PB22	5	5	5	5	5	5	5,00
PB23	5	5	5	5	5	5	5,00
PB24	4	2	3	4	3	3	3,17
PB25	3	3	4	4	3	3	3,33
			N	6			
			Kendall's W[a]	0.743			
			Chi-square	44.609			
			df	10			
			Asymp. sig.	0.000			

Except for PB24 and PB25, all suggested policies received a 4.0 or higher average rating in round 2. It indicates that, except PB24 and PB25, the suggested policies would be considered important alternatives. Kendall's W test results for the second round are likewise included in Table 13. The Delphi procedure may be terminated since Kendall's W in the second round is more than 0.500 (0.743). Kendall's coefficient of concordance (Kendall's W) reflects the extent to which participants agree [56]. Kendall's W is a numeric value between 0 and 1, showing the degree of agreement obtained by the participants; specifically, a Kendall's W more than 0.7 suggests a strong consensus; a Kendall's W of 0.5 indicates a moderate consensus; and Kendall's W less than 0.3 indicates a weak consensus [56]. So, the final proposed policies according to their rank are as follows: build institutional arrangements related to the distribution of authority, the protocol, procedure, and structure organization to manage multiple actors (PB91), strengthening policy of decentralization and regional autonomy (PB93), develop technical and standard operating procedure for effective intersectoral and cross-ministerial linkages (PB21), clarity the current coordinating body in developing strategic policy for food and nutrition (PB22), build a of compatibility that would facilitate use by other sectors and share knowledge about available data or information to avoid frequent duplication of data collection and analysis efforts as well as waste of resources (PB23), build the formal media for dissemination of knowledge and technology in the food sector, as well as food security and counselling (PB82), develop standard competency (PB83), build clear procedures that regulate accountability and penalties for instances (PB92), and develop capacity building of human resource through education/training (PB81).

Conclusion

Comment [i-[5]]: What about future studies? This agenda must be made comprehensively.

This research aimed to investigate the underlying barriers that may prevent public policy coordination among stakeholders in dealing with food security in Central Java Province and suggest some recommendations to enhance the coordination. After the content validation process, this study identified 22 factors as a barrier. The ISM results indicated that complicated problem of a food security issue (B1), insufficient sharing of information because many organizations perform to horde information (B3), ambiguities, and lack of clarity surrounding authority over setting policy directions and making decisions in a (legal-) normative manner (B4), a gap of coordination implementations between the rules and policies with the real practical (B5), fewer Budget allocations for food security problems (B6), different aims and priorities among multiple sectors and actors from different disciplines (B7), lack of motivation to collaborate among stakeholders from various disciplines (B16), and weak of infrastructure which is essential as the key impediment to growth and coordination with other sectors (B21) showed as the highest level that affected the remaining as barriers. Three very significant barriers were found by the ISM analysis for policy coordination among stakeholders in dealing with food security, namely inadequate human resources with the competency and specific understanding of food security (B8), the limited capability of regional Government to handle the problem (B9), and lack of communication and

specialization in multisector collaboration (B2). Then several policies have been proposed and validated by a panel of experts to mitigate those barriers.

In managerial implication, this study has some suggestions for Government and policymaking to improve the coordination among stakeholders in dealing with food security in Central Java Province. By checking the underlying barrier, this research might act as a valuable input for decision-making to allocate their effort in handling the barrier. The Government/ policymaking cannot emphasize all the barriers simultaneously; the Government of policymaking needs to categorize the barriers into several groups for ease of handle to improve the coordination among stakeholders in dealing with food security in Central Java Province. Moreover, after grouping, the Government or policymaking needs to identify which barriers influence the system the most to mitigate them early. Besides, perhaps efforts to mitigate the most influence barrier provide a solution for other barriers associated with that barrier.

Concerning the main barrier indicated by the ISM model (Figure 1), Government or policymaking should focus on designing a system that can improve competency and specific understanding of food security since it is a significant barrier to public policy coordination in handling food security. Besides, this barrier will influence the limited capability of the regional Government to handle the problem (B9), and then, the limited capability can cause a lack of communication and specialization in multisector collaboration (B2). Both barriers (limited capability and lack of communication and specialization) and lack of leader's role in giving guidance and working fast to deal with the situation can cause the inability of sub-national governance to facilitate decentralized ownership to regional governments (B22). This study highlights barriers to the public policy coordination in handling food security with a scientific approach (i.e., ISM methodology) that can assist more scrutinized research and develop a robust method to assess the barriers in public policy coordination.

There are several limitations to this study. First, the study is confined to the barriers to public policy coordination that Semarang City, Indonesia, has and overlooks other barriers to public policy coordination that other places or countries face. Future studies should focus on diverse places, nations, or a comparison of different regions or countries. The second limitation is that expert judgments regarding policies may be biased, and the third limitation is that the efficacy of policies recommended is not evaluated in a real-world setting. Future studies should include more experts from various stakeholder groups involved in food security policies and programs, as well as test the recognized policies for public policy coordination in dealing with food security in the real world or even create a simulation model to test the effect of policies on public policy coordination effectiveness.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

AS, NS, HD, and YP conceived and designed the study. RP and AF participated in the acquisition of data. AS, RP, and AF analyzed the data. AS and NS gave advice on methodology. AS drafted the manuscript. HD revised the manuscript. AS is the guarantor of this work and had full access to all the data in the study and takes responsibility for its integrity and the accuracy of the data analysis. All authors read and approved the final manuscript.

Data Availability Statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics Statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

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Consent to Participate

Not Applicable

Consent to Publication

Not Applicable

Ethics Statement

Ethical review and approval were not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required

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