

Strategy For Strengthening Household Food Security Based On Home-Yard Land Optimization: A Case Study Of The Surya Makmur Farmer Group

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Abstract

This study seeks to develop solutions for improving household food security by optimizing home gardens managed by the Surya Makmur Farmer Group in Yogyakarta. The study took a descriptive quantitative case-study technique. Primary data were gathered through field observations, document reviews, and interviews with group members (12 important members of the farmer group), while secondary data were sourced from relevant agricultural institutions and literature. Strategic analysis was carried out using the Internal Factor Evaluation (IFE), External Factor Evaluation (EFE), Internal-External (IE), and Strengths-Weaknesses-Opportunities-Threats (SWOT) matrices. The IFE score of 2.58 implies a pretty good internal situation, while the EFE score of 2.72 indicates a relatively strong ability to respond to external opportunities and dangers. The IE matrix assigns the group to Cell V, indicating a hold-and-maintain orientation. The SWOT analysis leads to strategies for high-value commodity diversification, marketing partnerships, information-technology-based marketing, structured group work programs, technical cultivation capacity building, business planning, environmentally friendly cultivation, direct marketing, cultivation standardization, small maintenance teams, annual work planning, and agricultural risk-management training. The findings suggest that home-garden optimization should not be limited to improving output, but should also include organizational strengthening, technical competency, market access, digitalization, and climate risk management .

Keywords: farmer groups; food security; home gardens; strategic management; SWOT analysis



INTRODUCTION

Household food security refers not only to a household's purchasing capacity, but also to its ability to receive food that is adequate, varied, safe, and sustainable. For farming households, food sources can be supplemented by exploiting resources in close proximity to the home, such as the home garden. Home gardens have important attributes because they allow for the cultivation of numerous commodities in a very small space while providing fresh food, increasing production diversification, and the opportunity for additional income. Studies on home gardens indicate that this system can contribute to food availability, dietary diversity, and household well-being. However, the level of these advantages depends greatly on local social, ecological, and institutional factors (Galhena et al., 2013; Whitney et al., 2017; Hansen et al., 2022).

Empirical evidence also shows that enhancing household gardens does not always lead to increased food security. Sibhatu and Qaim's (2018) meta-analysis finds that while the connection between production diversity and household dietary diversity is generally positive, it is weak and inconsistent. As a result, plans for employing home gardens must include product categories, consumption patterns, managerial capability, input availability, and the household's ability to transform produce into food or cash. For example, Ferdous et al. (2016) proved that year-round home garden models could improve household food supplies. These findings highlight the necessity of planned home garden management over irregular crop planting.

Home gardens in Indonesia are also shifting away from subsistence farming and toward commercialization. Abdoellah et al. (2020) show that rural Indonesian home gardens can be used for both food production and income generation; However, the commercialization process can change their usage patterns and purposes. This position is significant for farmer groups since improving household food security does not have to conflict with economic goals. Instead, commodity diversification and strategic produce allocation can be used to complement household consumption and economic value production.

When managing a home garden in a group, the institutional factor becomes increasingly crucial. Farmer groups can help with learning, information sharing, activity coordination, input procurement, and collective marketing. A comprehensive evaluation found that farmer organizations can provide benefits in terms of income, market access, resilience, and certain aspects of production; however, these benefits are influenced by service quality, organizational capability, and member characteristics (Bizikova et al., 2020). Ma et al. (2023) show that farmer associations can encourage the adoption of agricultural methods and technologies, promote sustainability, and increase bargaining power. According to Fischer and Qaim (2014), the level of member participation is impacted by the advantages received and the group's institutional arrangements. Thus,

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the mere presence of a farmer group is insufficient; the organization must have meetings, work schedules, a division of tasks, and operational processes that can sustain member participation.

Market variables also influence the viability of home-garden optimization efforts. Farmer groups can help reduce communication barriers and transaction costs through collective marketing; However, their success is dependent on organizational capacity, leadership, and the ability to meet market demands. Fischer and Qaim (2012) discovered that collective action can result in financial benefits for active members, whereas Mutonyi (2019) proved that involvement in producer marketing groups can improve well-being by increasing income and asset ownership. Nonetheless, Bernard and Spielman (2009) warned that producer organizations may confront issues with inclusion and participation in decision-making processes. As a result, marketing strategies for farmer organizations must be developed in conjunction with the building of internal institutional structures. Experience with producer groups shows that strengthening linkages with modern markets requires proper coordination capacity and a business-oriented strategy (Trebbin, 2014).

Advances in information technology create new opportunities to close the gap between manufacturers and consumers. While digitalization of agriculture can improve access to information, markets, extension services, and decision-making resources, the extent to which these benefits are realized is determined by factors such as digital literacy, connectivity, costs, and technology alignment with farmer needs (Choruma et al., 2024). Digital technology has the potential to improve transparency and efficiency in agricultural supply chains, but its implementation must consider local contexts and user skills (Mwangakala et al., 2024). As a result, the Surya Makmur farmer group's use of information technology is best suited to simple, direct activities including product promotion, consumer communication, price information, and marketing coordination.

In addition to commercial and technological factors, climatic instability, as well as plant pests and diseases, pose substantial dangers to home garden systems. Studies on smallholder farmers in Indonesia show that socioeconomic factors, government support, and availability to knowledge all influence adaptation choices, with solutions including crop diversification, land management, and livelihood diversification (Andrista et al., 2025). Other research on Indonesian smallholders demonstrates that engagement in farmer groups and access to agricultural infrastructure are associated with climate change adaptive capacity (Purwanti et al., 2022). As a result, home garden optimization solutions must consider both productivity and risk control. Standardizing farming techniques, pest and disease control, diversification, and increasing member knowledge are all critical components of sustainability measures.

Given this context, the Surya Makmur Farmer Group is an appropriate case study; while it has assets such as home garden resources, cultivation experience, motivated



members, and the potential for external support, it still faces challenges with participation, technology, business orientation, work programs, and cultivation techniques. This study maps the group's internal and external conditions using the IFE and EFE matrices, evaluates its strategic position using the IE matrix, and develops strategic alternatives using SWOT analysis. The study's goal is to develop a strategy for improving household food security by optimizing home garden land in accordance with the Surya Makmur Farmer Group's internal conditions, external possibilities, and threats.

Objectives

This study employs a descriptive quantitative methodology, focusing on formulating strategies to optimize home-garden land use to enhance household food security. The study involved 12 key participants all active members of the Surya Makmur Farmer Group selected via a census sampling method. Secondary data were obtained through the Yogyakarta City Agriculture and Food Agency and a literature review. Primary data were collected through field observations, a review of group documents, and interviews covering member profiles and their levels of involvement in home-garden utilization. Following David (2022), four key strategic matrices were used for systematic data analysis. The initial stage involves identifying and evaluating external opportunities and threats using the External Factor Evaluation (EFE) matrix to summarize information regarding economic, social, cultural, and environmental factors, as well as competitive elements affecting the group's position. Subsequently, the Internal Factor Evaluation (IFE) matrix was used to identify key strengths and weaknesses across the Surya Makmur Farmer Group's functional areas; this matrix served as the basis for identifying inter-area relationships, which underpin the strategy. The Matching Stage (utilizing IE and SWOT matrices) was then employed to process combinations of internal and external factors and generate strategic alternatives.

DISCUSSION

Matrix Evaluation of Internal Factors of the Surya Makmur Farmers Group

The Internal Factor Evaluation (IFE) matrix is used evaluate key internal factors that become The strengths and weaknesses of the Surya Makmur Farmers Group are shown in Table 1. The results study regarding the total score weighted The internal factor of the Surya Makmur Farmers Group is 2.58, based on theory David (2022), indicates that group This own strong internal position because above mark average threshold 2.50.

Table 1. Matrix Evaluation of Internal Factors of the Surya Makmur Farmers Group

Key Internal Factors		Weight	Ranking	Weighted Score
Strength				
1	Own experience cultivation plant horticulture and food	0.08	3	0.21
2	Availability plant horticulture and food	0.08	3	0.23
3	Availability land yard and facilities base cultivation	0.08	4	0.29
4	Availability of group cash as initial capital	0.07	3	0.19
5	There is enthusiasm and motivation For develop business farmer	0.08	4	0.29
6	Agricultural product Already utilized For fulfillment food and nutrition House ladder	0.08	4	0.28
Weakness				
1	is n't any yet regular meeting	0.07	2	0.14
2	Utilization results agriculture Not yet oriented business	0.07	2	0.13
3	Participation rate member group Still low	0.07	2	0.13
4	Do not know method control pests and diseases	0.06	2	0.13
5	Technology cultivation used Still traditional	0.07	2	0.13
6	Lack of time For maintenance plant	0.07	2	0.14
7	Cultivation and fertilization techniques not optimal	0.07	2	0.14
8	Group Not yet have a focused work program	0.07	2	0.14
Total		1.00		2.58

Score values shown in Table 1. were obtained from multiplication weight that shows interest relatively factor in develop group . The highest score obtained on the factor strength namely of 0.29, originating from from key internal factors availability land yard along with facility base cultivation as well as height enthusiasm and motivation member



in develop business farmers . On the other hand , the score highest in factors weakness namely 0.14 which is located at several factor key internal weaknesses strategic, namely not yet existence regular meetings , lack of time maintenance , cultivation techniques and fertilization not optimal, and group Not yet have a work program directed . The IFE results show a total weighted score of 2.58, placing it slightly above the midpoint of 2.50. This indicates that the group possesses sufficient internal capital to pursue development, although it has not yet achieved a highly dominant position. Key strengths include the availability of home garden land and basic cultivation facilities, alongside the members' high level of enthusiasm and motivation. These findings are significant because successful home garden management relies heavily on the availability of basic resources, knowledge, maintenance capabilities, and design suitability within the local context (Galhena et al., 2013; Hansen et al., 2022). In the case of Surya Makmur, the existing land and member motivation constitute strong initial assets; therefore, the strategy should focus not on creating new resources, but on enhancing the quality of how existing resources are utilized.

Matrix External Factor Evaluation Surya Makmur Farmers Group

Matrix *External Factor Evaluation* (EFE) is shown in Table 2. The total value obtained is score of 2.72 for factor externally in the Surya Makmur Farmers Group . The total value more big than 2.5 which is according to David (2022) indicates that The Surya Makmur Farmers Group has position strong external , where the group capable utilise chance external with good and avoid threats faced .

Table 2. Matrix External Factor Evaluation Surya Makmur Farmers Group

External Factors Key		Weight	Ranking	Weighted Score
Chance				
1	Availability support from extension workers , colleges high , and government programs	0.11	3	0.32
2	Available system partnership marketing that can utilized group	0.09	3	0.28
3	Request vegetable Keep going increase and price sell tend tall	0.10	3	0.30
4	Progress technology information and communication that can support marketing	0.10	3	0.30
5	Support environment social in activity development group farmer	0.11	3	0.32

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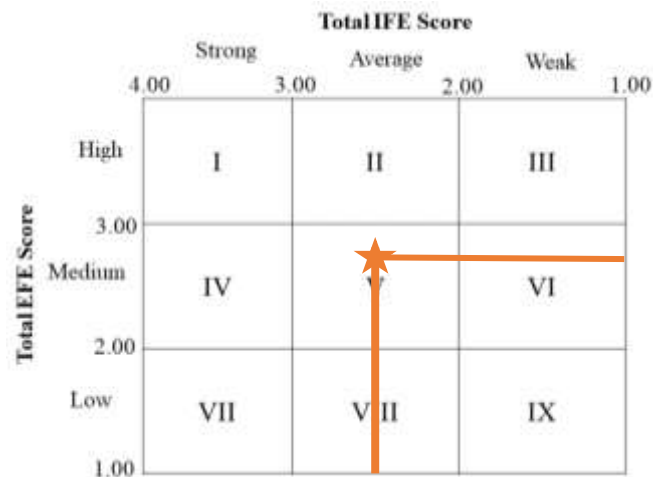


External Factors Key		Weight	Ranking	Weighted Score
Threat				
1	There was an attack organism nuisance plant and disease plant	0.10	2	0.20
2	Many types same business as competitors business	0.09	2	0.19
3	Game prices by middlemen	0.09	2	0.18
4	Fluctuation Power buy society and instability market price	0.10	3	0.30
5	Unfavorable climate certain influential to results plant	0.10	3	0.30
Total		1.00		2.72

The highest score obtained on an opportunity namely of 0.32, which comes from from factor strategic external availability support from extension workers , colleges high , and government programs and the existence of support environment social in activity development group farmer . On the other hand , the score highest from necessary threats be aware of, namely 0.30 which is fluctuations Power buy Society and instability market prices , as well as climate that is not uncertain. An EFE score of 2.72 indicates a relatively favorable external environment and that the group possesses the capacity to respond to opportunities. The most significant opportunities stem from support provided by extension agents, universities, government programs, and the social environment. These conditions provide a solid foundation for strategies aimed at strengthening technical and institutional capacities. Ma et al. (2023) demonstrate that farmer organizations can serve as conduits for enhancing the adoption of agricultural practices, technologies, and sustainability measures when institutional support is effective. In the case of Surya Makmur, support from extension agents and universities should be translated into measurable activities—such as field schools, demonstration plots, cultivation calendars, training on pest and disease control, and guidance in developing business plans.



Determination Position Surya Makmur Farmers Group



Mapping results on the Matrix *Internal-External* (IE) is shown in Figure 1. The Surya Makmur Farmers Group is in Cell V with Hold and Maintain strategy category Position This determined by the total IFE score of 2.58 which indicates average internal conditions , and a total EFE score of 2.72. The main relevant strategies For executed in position medium is *market segmentation* and innovation light to stay competitive . IFE and EFE scores of 2.58 and 2.72, respectively, place the Surya Makmur Farmer Group in Cell V of the IE matrix, indicating a "hold and maintain" orientation. This position implies that the group is neither in a situation requiring aggressive expansion nor one requiring a passive defensive strategy. The appropriate strategy is to maintain the existing resource base while addressing areas of weakness. In the context of this study, this principle translates into two agendas: strengthening the market for commodities already in production and selectively developing new products or commodities. This approach aligns with findings on farmer organizations emphasizing that the strengthening of services, market access, and internal capacity must occur concurrently (Bizikova et al., 2020).

Alternative Strategies of the Surya Makmur Farmers Group

Alternative strategy results based on SWOT matrix shown in Table 3. SO1 is in the form of diversification commodities worth sell tall arranged with utilise internal strength of the group farmer in the form of experience cultivation plant horticulture and food (S1), availability plant horticulture and food (S2), availability land yard (S3), as well as existence enthusiasm and motivation For develop business farmers (S5) used For catch existing opportunities in the environment external group farmer in the form of support extension workers , colleges high , and government programs (O1) as well increasing

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demand and price sell product agriculture (O3). Next SO2, namely strengthening business farmer through partnership marketing , utilizing availability of group cash funds as initial capital (S4) and utilization results agriculture For fulfillment food House ladder (S6) to catch opportunity existence system partnership marketing (O2) and support environment social in development group farmer (O5). Meanwhile that , SO3 is in the form of utilization technology information For marketing product yard arranged based on availability plants and yields agriculture (S5 and S6) and opportunity progress technology supporting information and communication marketing (O4).

Alternative strategy WO1 is in the form of preparation of work programs group farmer used For overcome weakness group farmer in the form of Not yet existence regular meeting (W1), level participation member group Still low (W3), and group Not yet have a focused work program (W8) so that can catch factor strategic external opportunity like utilise support from extension workers , colleges high , and government programs and support environment social in activity development group farmers (O1 and O5).

WO2 is a program for improving ability technical cultivation member arranged For overcome limitations knowledge control pests and diseases (W4), technology cultivation that is still traditional (W5), limitations time maintenance plants (W6), as well as technique cultivation and fertilization are not optimal (W7) with utilise opportunity support counseling and progress technology (O1 and O4). Furthermore, WO3 is in the form of mentoring compilation plan business yard directed For overcome results agriculture that has not yet oriented business (W2) and not yet the existence of a clear work program (W8) with utilise opportunity system partnership marketing (O2) and increasing market demand (O3).

More in again , the ST1 approach is in the form of implementation system cultivation friendly environment arranged with utilise experience cultivation and utilization land yard (S1 and S3), availability plants (S2), as well as enthusiasm members (S5) for face threat attack organism nuisance plants and diseases (T1) as well condition climate that is not determined (T5). ST2 is in the form of marketing direct to consumer utilise availability results agriculture and its utilization For need House stairs (S4 and S6) to reduce threat fluctuations market price and power buy community (T3 and T4) and competition business similar (T2).

The final SWOT matrix result is the WT strategy that was initiated from WT1 in the form of standardization technique cultivation directed For overcome weakness technology cultivation that is still traditional and technical suboptimal fertilization (W4, W5, and W7) in face threat attack pests and diseases (T1) and climate that is not determined (T5). WT2 is in the form of formation group Work small For maintenance yard arranged For overcome low participation member and limitations time maintenance plants (W1, W3, and W6) to be able to face threat



Table 3. SWOT Matrix of Surya Makmur Farmers Group

	Strength	Weakness
	1. Own experience cultivation plant horticulture and food 2. Availability plant horticulture and food 3. Availability land yard and facilities base cultivation 4. Availability of group cash as initial capital 5. There is enthusiasm and motivation For develop business farmer 6. Agricultural product Already utilized For fulfillment food and nutrition House ladder	1. is n't any yet regular meeting 2. Utilization results agriculture Not yet oriented business 3. Participation rate member group Still low 4. Do not know method control pests and diseases 5. Technology cultivation used Still traditional 6. Lack of time For maintenance plant 7. Cultivation and fertilization techniques not optimal 8. Group Not yet have a focused work program
Chance	SO Strategy	WO Strategy
1. Availability support from extension workers , colleges high , and government programs 2. Available system partnership marketing that can utilized group 3. Request vegetable Keep going increase and price sell tend tall 4. Progress technology information and communication that can support marketing	1. Diversification commodities worth sell high (S1, S2, S3, S5, O1, O3) 2. Strengthening business farmer through partnership marketing (S 1, S 6, O2, O5) 3. Utilization technology information For marketing product yard (S5, S6, O3, O4)	1. Preparation of work program group farmers (W1, W3, W8. O1, O5) 2. Improvement program ability technical cultivation members (W4, W5, W6, W7, O1, O4) 3. Mentoring compilation plan business yard (W2, W8, O2, O3)

5. Support environment social in activity development group farmer		
Threat	ST Strategy	WT Strategy
1. Danya attack organism nuisance plants and diseases plant 2. Many types same business as competitors business 3. Game prices by middlemen 4. Fluctuation Power buy society and instability market price 5. Unfavorable climate certain influential to results plant	1. Implementation system cultivation friendly environment (S1, S3, S5, T1, T5) 2. Marketing direct to consumers (S4, S6, T2, T3, T4)	1. Standardization technique cultivation (W4, W5, W7, T1, T5) 2. Formation group Work small For maintenance yard (W1, W3, W6, T1, T5) 3. Prepare a work program annual group (W1, W8, T2, T4) 4. Training about management risk agriculture (W2, W4, T1, T4, T5)

Attack organism disruption and competition effort (T1 and T2). WT3 is in the form of preparation of work programs annual group directed For overcome weakness Not yet the existence of a targeted work program (W1 and W8) in face fluctuations market price and power buy society (T2 and T4). WT4 is in the form of training management risk agriculture arranged For overcome low orientation business and limitations knowledge technical members (W2 and W4) in face threat attack pests , fluctuations prices and uncertainty climate (T1, T4, and T5). Theoretically, this study demonstrates that optimizing home-garden land should be understood as a multidimensional issue linking household food security, strategic management, farmer institutions, markets, technology, and climate risks. The SWOT approach proves useful for integrating these dimensions, as it allows internal and external factors to be translated into strategic options. In practical terms, the most urgent strategy is to build an organizational foundation through work programs, regular meetings, technical capacity building, and the division of

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responsibilities. Once this foundation is established, efforts regarding diversification, market partnerships, direct marketing, and digitalization can be expanded. From a social perspective, strengthening the group can enhance member interaction, learning, and collective action.

CONCLUSION

Based on research suggests that the Surya Makmur Farmer Group has a high potential to improve household food security by optimizing home garden land, as indicated by an IFE score of 2.58 (internal conditions) and an EFE score of 2.72 (external conditions). The group's location on the Internal-External (IE) Matrix is in Cell V, indicating a "hold and maintain" strategy; hence, development activities should prioritize preserving and strengthening existing resources while also addressing internal deficiencies. The SWOT analysis yielded several strategic alternatives, including diversifying high-value commodities, strengthening farming operations through marketing partnerships, using information technology for marketing, formulating group work programs, enhancing technical cultivation skills, providing guidance on home garden business planning, implementing eco-friendly cultivation systems, engaging in direct-to-consumer marketing, standardizing cultivation techniques, establishing small working groups for garden maintenance, developing annual work programs, and conducting agricultural risk management training. Overall, strengthening food security through home garden land requires more than just increasing production; it necessitates an integrated approach involving the strengthening of group institutions, enhancing members' technical capacities, developing market access and strategies, using information technology, and managing production and market risks. Thus, optimizing home garden land can serve as a development strategy that not only supports household food needs but also creates opportunities to sustainably increase the economic value of farming activities .

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