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MORALITY BEFORE KNOWLEDGE

Independence of housewives through hydroponic urban farming as an effort to improve the family economy

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ABSTRACT
Background: This research aims to delve into the potential of independence and increasing family economic income through hydroponic urban farming in the Women Farmers Group (KWT) of Anggrek, Bara-Baraya District, Makassar City, using a qualitative approach. The main focus of this research is to deeply understand how hydroponic urban farming affects the economy and independence of families, taking into account the experiences, perceptions, and social impacts of active participation in this activity. **Methods**: The research methodology used is a qualitative approach with in-depth interviews as the main data collection instrument. The research sample consists of 3 housewives and 1 government official who have been involved in hydroponic urban farming. The interview process was conducted in a structured manner, focusing on aspects of personal experience, changes in lifestyle, and the role of urban farming in improving family economics. This study is structured using qualitative analysis and further elaborated with descriptive writing methods. **Findings:** The research findings indicate that hydroponic urban farming has a significant positive impact on the independence and increasing economic income of families. **Conclusion:** Hydroponic urban farming significantly enhances women's economic self-reliance, offering policy insights for optimizing implementation and productivity. **Novelty/Originality of this Study:** This study explores the economic empowerment of urban housewives through hydroponic urban farming, specifically within the Anggrek's KWT in Makassar City. This research uniquely addresses the dual impact of hydroponic farming on enhancing family income and ensuring food security, focusing on the often-overlooked demographic of housewives in urban settings.

KEYWORDS: independence; hydroponic urban farming; family economy.

1. Introduction

Indonesia is a country blessed with abundant natural resources, including water, land, forests, seas, and diverse biodiversity spanning from Sabang to Merauke. These resources can serve as capital for Indonesia's development if managed properly. One of the resources that continues to contribute to Indonesia's economic growth is the agricultural sector, as it provides a significant amount of employment compared to other economic sectors (Ibrohim et al., 2020). Efforts towards food self-sufficiency and food sovereignty in Indonesia have been officially initiated by the Ministry of Agriculture with the aim of reducing the number of families facing extreme food insecurity. Utilizing local food resources available in communities and cultivating them at home is one solution to address this issue (Degefa et al., 2021). To support the food needs of urban communities,

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local governments in many countries implement urban farming strategies involving the role of urban women.

Urban women in many countries bear the responsibility for the survival and welfare of households (Kutiwa et al., 2010). They have concerns about providing food for their families, leading them to choose organic farming. Additionally, urban women have the potential to be involved in urban farming as it can be carried out in areas close to urban settlements, often on backyard plots, rooftops, and idle land around homes. The role of women in urban agriculture is not only to ensure family food security but also to increase income. Women farmers can earn money by selling surplus products from urban farming activities. They use the income from urban farming to finance various needs such as housing loans, sanitation maintenance, and agricultural production costs (Zhike Lv, 2019). Another study by Adedayo & Tunde (2013) states that female farmers face various challenges such as a lack of credit facilities, limited access to agricultural inputs, poor terrain, and a lack of extension services.

Therefore, hydroponic urban farming emphasizes environmentally friendly farming methods such as the use of organic fertilizers and water conservation. It is important to employ interdisciplinary strategies that combine knowledge of soil science, plant physiology, sustainable agriculture, and technology. Crop rotation and companion planting are two ways urban farmers can reduce the demand for pesticides and herbicides. Urban crop farming is considered an important agricultural activity for the modern and circular economy, as it can also increase urban residents' income and reduce agricultural waste. The use of hydroponic technology is one option or effort to improve community resilience while combating poverty, especially in urban areas. Hydroponics is a technology for growing plants without soil, with an emphasis on meeting their nutritional needs (Vinci & Rapa, 2019). Farming with hydroponic systems aims to facilitate plant cultivation for humans (Lakhiar et al., 2020).

Modifying growing media is one alternative for sustainable agricultural production to address challenges such as limited land availability and decreasing water resources (Sharma et al., 2018). Hydroponics stands as the best choice to create conditions for healthy and prosperous communities in the future, enhancing food self-sufficiency, and supporting food security, especially for individuals lacking access to vast land (Atmadja et al., 2022). There are various types of hydroponic systems, including drip systems, ebb and flow systems, NFT (nutrient film technique), deep water culture, aeroponics, and wick systems (Phibunwatthanawong & Riddech, 2019). Each of these six hydroponic systems delivers nutrients to plant roots differently. Hydroponic plant cultivation encompasses horticultural crops such as annuals and perennials, vegetables, fruits, flowers, ornamental plants, medicinal herbs, and landscaping plants. Regardless of the season, individuals or communities can engage in hydroponics for recreational and economic purposes.

In this study, there arises a problem related to the limited agricultural land in urban areas due to increasing population density. Therefore, the presence of urban and peri-urban agriculture adds value not only in meeting food needs but also in practical aspects that can affect the ecological and economic sustainability of cities. Many benefits can be gained if urban agriculture is conducted while still considering environmental issues. Urban agriculture has significant economic, ecological, social, aesthetic, educational, and tourism benefits. The conditions of urban residents' agriculture can be utilized to optimize land use and natural resources in urban environments by applying hydroponic technology (Rifqi et al., 2016). Using hydroponic technology to maximize organic vegetable yields is one of the latest developments in meeting the needs of healthy living. Hydroponically grown vegetables are claimed to be healthier and more environmentally friendly than other varieties because they use various organic fertilizers. Without requiring chemicals, various organic fertilizers can be made from vegetables, fruits, organic waste, and other natural materials.

The Women Farmers Group (KWT) of Anggrek is located on Jalan Abu Bakar Lambogo Lorong 4 RT/005 RW/003, Bara-Baraya Village, Makassar District, Makassar City. Established on January 7, 2018, with 30 members, KWT serves as a platform for women to

contribute to the advancement of the agricultural sector in the city. This group is a gathering of women farmers to accommodate the appreciation of female farmers. The presence of KWT "Anggrek" in Jalan Abu Bakar Lambogo Lorong 4, Makassar District, is expected to provide opportunities for women to utilize their abilities in agriculture. Additionally, the existence of KWT provides opportunities for women to play roles as initiators, movers, and connectors with the government or companies, thereby helping to improve family economies. In this study, the author further explains the potential for increasing income and family sustainability through hydroponic urban farming practices. Focusing on housewives as the main agents in this activity, this study seeks to understand the economic and long-term sustainability impacts of participation in hydroponic urban farming.

1.1 Economic independence of housewives through the economic capability theory and urban hydroponic farming with agroecology theory

According to the Economic Capability Theory, economic independence entails more than just income and production growth; it also involves individuals' capacity to develop their potential and choose lives they consider valuable. Amartya Sen emphasizes the importance of considering social, political, and cultural aspects in striving for economic independence. This theory underscores the significance of education, health, access to resources, and political participation as essential factors in achieving economic independence. Housewives play a crucial role in enhancing family economics. Through activities like urban farming, housewives can bolster their family's economy by reducing vegetable expenses through engagement in hydroponic urban farming.

In practice, urban farming based on agroecology theory can provide benefits such as fresh local food production, reducing carbon footprint, enhancing food security, improving urban environmental quality, and creating productive and sustainable agricultural systems. In urban farming, these goals can be achieved through practices such as composting, using organic fertilizers, and recycling organic waste to minimize the use of chemical fertilizers and maintain soil nutrient balance.

Urban farming has a strong focus on long-term sustainability and agricultural system resilience. This can be achieved through the implementation of practices such as the use of renewable energy, waste reduction, and smart water management. Urban farming is the cultivation process in limited land, akin to horticulture. Cultivation or animal husbandry within and around large cities (metropolitan areas) or small towns to provide food or other needs and additional income is known as urban farming, sometimes referred to as urban agriculture, according to experts. Distribution, marketing, and processing of harvested products are all included in this description.

However, the current ecological process is regulated by agricultural processes in terms of fertilization, water control, pest and disease management, and harvest regulation. In turn, economic and social decisions determine agricultural operations. Common indicators of urban socio-economic sustainability look at the fact that hydroponic urban farming contributes to nutritional resilience, and energy needs contribute to household income even in high-density population conditions. Additionally, from a socio-economic perspective, adaptation to significant transformations from rural to urban development is required.

1.2 Economic improvement through agricultural contribution

The term "household" refers to the economic significance of the household unit. These activities include the allocation of tasks and responsibilities, household financial management practices, the amount of money earned and spent, and the types of goods and services produced. The amount of money generated by an activity for a household is determined by the productivity of production elements.

The main sources of income usually influence household income stability.

Non-agricultural income streams are often non-seasonal and can be generated at any time throughout the year. Gardening in the backyard contributes to income through commodities sold and self-consumed commodities.

2. Methods

The research method is the most crucial part of academic work, it's the technique or approach used to acquire knowledge from the results of a study. Qualitative research method is one of several types of research methods available. Generally, qualitative research methods are used to support researchers in producing deep and nuanced understanding of specific phenomena or situations (Havers et al., 2020). This study was conducted at one of the business units in Makassar City, namely the Women Farmer Group of Anggrek. The research aims to analyze the economic independence of urban housewives through hydroponic urban farming in improving family economics, with the following conceptual framework (Fig. 1).

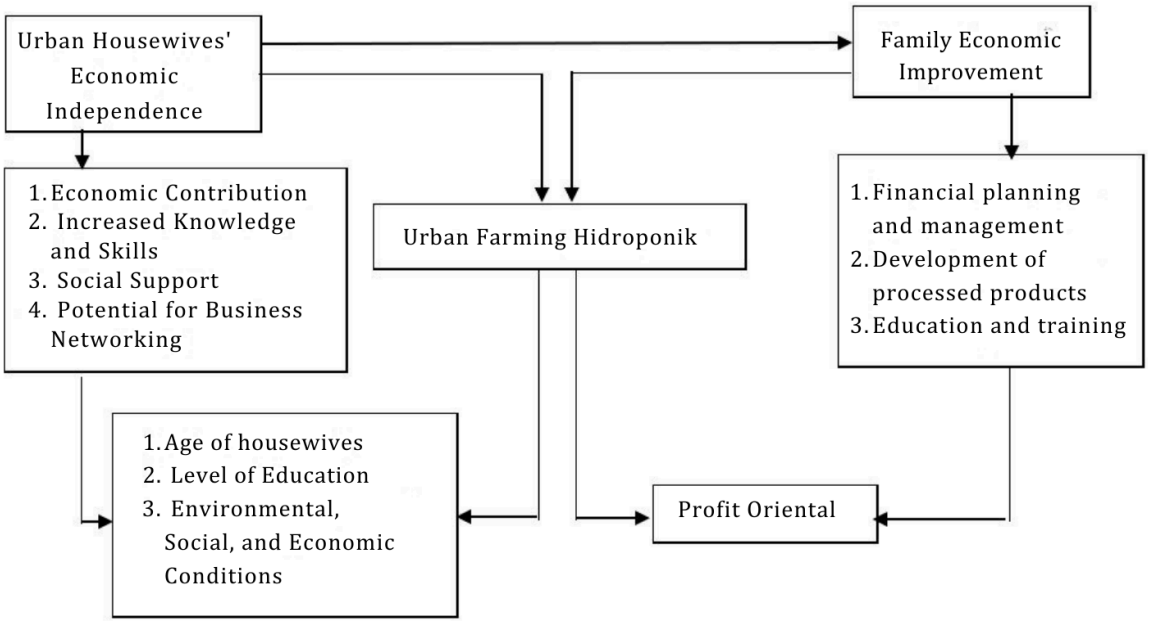

Fig. 1. Conceptual framework

This research employs a descriptive qualitative method. This type of descriptive qualitative research primarily gathers data through the use of words and images rather than numbers as the main approach (Table 1). Observation, interviews, and documentation are the methods used during the research process. Observation involves observing a phenomenon that occurs in the research location (Lopez & Whitehead, 2016). Conducting interviews with informants is also one of the data collection methods commonly used in qualitative descriptive research, where interviews can provide a direct and clear approach to obtaining detailed data (Barrett & Twycross, 2018).

Table 1. Research informants

No	Name	Gender	Age	Last education	Position
1	Jumriati	F	57	High school	Chairperson of Anggrek's KWT
2	Enny	F	49	High school	Member of Anggrek's KWT
3	Atyratu	F	53	Elementary school	Member of Anggrek's KWT
4	Syamsuddin Paddi	M	66	High school	Chairperson of RW 03

The main informants are urban housewives involved in hydroponic urban farming practices in the Anggrek's KWT, Makassar City. These informants are members of Anggrek's KWT who are actively engaged in urban farming activities and have experience

in implementing hydroponic methods in their homes. Additionally, informants include other members of Anggrek's KWT, such as group leaders or community figures involved in the development of urban farming in the area. These additional informants can provide a broader perspective on the social and economic context in Anggrek's KWT. The characteristics of the respondents in this study are as follows: (1) urban housewives engaged in hydroponic urban farming; (2) their hydroponic urban farming experience is more than 1 year; (3) their urban farming contributes to increasing family income; (4) they are involved in urban farming under the Anggrek Urban Women's Group (Anggrek's KWT) and reside in Makassar city.

3. Results and Discussion

3.1 Overview of Anggrek's KWT and contribution of hydroponic urban farming in assisting the empowerment and economic improvement of housewives group

Within Anggrek's KWT, there are several areas or houses that serve as sites for the implementation of hydroponic urban farming by urban housewives. Anggrek's KWT itself is a group engaged in urban agriculture, particularly in the practice of hydroponic urban farming. This research will involve urban housewives in implementing this hydroponic technique in their homes by interview (Table 2). Anggrek's KWT is located at Jalan Abu Bakar Lambogo Lorong 4 RT/005 RW/003, Bara-Baraya Village, Makassar District, Makassar City.

Income from farming in this research is generated from farming in the yard, both for consumption and for sale (Table 2). Generally, agricultural produce is not sold but consumed by the household. Therefore, the farming analysis in this research is conducted by calculating the total production over one year of hydroponic farming multiplied by the prevailing market price. Hydroponic farming is a positive activity for urban communities. Apart from obtaining health benefits, the environment also receives economic benefits. Optimal harvest results can meet household consumption needs, thereby reducing the burden of daily vegetable shopping expenses. The average total income per respondent from hydroponic farming is Rp. 300,000.00 per month. Table 3 shows the income contribution before and after engaging in hydroponic urban farming in Anggrek's KWT, Makassar City. The average total income per respondent is Rp. 300,000.00/month. The housewives involved in Anggrek's KWT mostly grow vegetable crops. Common vegetables grown in Anggrek's KWT include mustard greens, lettuce, spinach, water spinach, eggplant, chili peppers (both spicy and bell peppers), and tomatoes. Some leafy vegetables like lettuce and water spinach are grown using hydroponic systems.

Table 2. Average income before engaging in hydroponic urban farming, expenses, and income after engaging in hydroponic urban farming

Income before engaging in urban farming (IDR)	Expenses (IDR)	Income after engaging in urban farming (IDR)
582.200,00	211.100,00	371.100,00
683.900,00	330.000,00	353.900,00
565.400,00	242.500,00	322.900,00

Essentially, the empowerment of housewives through hydroponic urban farming enables them to have their own food source within their homes. By independently cultivating plants, they can reduce dependence on external supplies and become more self-sufficient in terms of food. Additionally, hydroponic urban farming efforts can serve as an additional source of income for the group of housewives (Table 3).

Currently, land scarcity in urban areas is a concern worldwide, where agricultural land becomes part of urban ecosystems facing threats and disruptions in social, economic, and ecological dimensions in the future (Prianto & Abdillah, 2022; Widianingsih et al., 2023). According to Langemeyer et al. (2021) and Gulyas & Edmondson (2021), one of the

vulnerability issues in urban areas is the scarcity of agricultural land threatening urban food security. This poses a challenge for urban areas to meet food sufficiency to support urban resilience through urban farming (Gulyas & Edmondson, 2021; Langemeyer et al., 2021).

Table 3. Interview results: Contribution of hydroponic urban farming to economic improvement

Questions	Informant responses
How does hydroponic urban farming assist mothers in increasing family income? Coding A1	Coding A1.1 "Hydroponic urban farming indeed greatly assists us in increasing our income because of its faster harvest cycle". (Jumriati/4-11-2023)
How do mothers utilize hydroponic urban farming to increase family income? Coding A2	Coding A2.1 "Our activities are done collectively, and of course, there are benefits we feel from hydroponics. Besides increasing our knowledge, we also experience economic benefits. Because of the faster harvesting process, we can consume the produce more quickly, which helps the housewives here to reduce expenses on purchasing vegetables. If the KWT mothers need vegetables or chili, they can directly pick them from the hydroponic pots for consumption". (Jumriati/4-11-2023)
What are the economic benefits that mothers experience after being involved in hydroponic urban farming? Coding A3	Coding A3.1 "The economic benefits include reducing expenses on purchasing vegetables, and of course, the budget allocated for buying vegetables can be saved for purchasing other necessities". (Jumriati/4-11-2023)
Do mothers perceive any changes in family expenses after being involved in hydroponic urban farming? Coding A4	Coding A4.1 "Yes, we strongly feel the changes after joining Anggrek's KWT. Our expenses have definitely reduced, such as the reduction in vegetable purchases, transportation costs, decrease in food waste disposal costs, and having additional income from hydroponic urban farming efforts". (Atyratu/4-11-2023)
What are the benefits of hydroponic urban farming that mothers experience while being part of Anggrek's KWT? Coding A5	Coding A5.1 "As hydroponic urban farmers who are part of Anggrek's KWT, we experience many benefits and noticeable changes after implementing hydroponic cultivation. One of the advantages is that plants grow faster due to the natural hydroponic system, where they receive precise and consistent nutrients throughout the entire growth period. This enables plants to grow faster compared to traditional methods. Additionally, there's a year-round supply of fresh vegetables. With hydroponic urban farming, us mothers from Anggrek's KWT can produce fresh vegetables throughout the year, without depending on seasons or weather conditions. This gives us the opportunity to enjoy fresh and healthy vegetables all year round, meeting the stable demand of consumers". (Atyratu/4-11-2023)

Various studies have shown that the influence of urban farming can be one way to improve family economies and urban resilience in facing vulnerabilities and threats in the future (Grochulska-Salak et al., 2021; Gulyas & Edmondson, 2021; Langemeyer et al., 2021). Nur (2020) stated that in Makassar City, revitalization of urban alleys is carried out to encourage the implementation of urban farming in the urban spatial planning of Makassar City as urban land use and positive urban interactions. In the study by Suparwoko & Taufani (2017), for the improvement of family economies and addressing

food security threats in large cities like Makassar with rapid physical development and lack of green spaces, the government encourages the implementation of urban farming.

Therefore, the development of self-reliance among groups of housewives needs to consider and study skills and knowledge about hydroponic techniques, business management, and marketing. This requires appropriate training and mentoring that can help improve their skills and knowledge, thus increasing the chances of business success. It is also important to pay attention to the access of groups of housewives to the resources needed in hydroponic urban farming, such as land, water, fertilizers, and hydroponic equipment. Research shows that limited access to these resources can be a barrier to developing hydroponic urban farming businesses.

Hydroponics is one of the alternatives for growing vegetables in limited space and hot weather (Arcas et al., 2021; Sá et al., 2021). This is because hydroponic techniques allow control over temperature, pH, nutrient availability, and economical land use since it does not require soil as a growing medium (Hadinata & Mashoedah, 2021; Dewi et al., 2021). Hydroponics is a method of growing plants without using soil, instead utilizing nutrient-rich solutions or other materials containing nutrients such as coconut husks, mineral fibers, sand, broken bricks, sawdust, and others as substitutes for soil (Onggo, 2020). Hydroponics can enhance the creativity of housewives to process and create new farming media by utilizing existing or recycled materials (Laraswati et al., 2021; Wedashwara et al., 2021). There are various hydroponic methods that can be applied, including the wick system, irrigation system, ebb and flow hydroponics, NFT system, floating raft (water culture), and aeroponic system (Miller et al., 2020).

From an affordability perspective, urban farming is conducted at the smallest possible scale, namely the household level, utilizing small land areas inside or outside the home to grow fruits and vegetables for consumption. This can reduce household expenses or, on a larger scale, provide additional income or resale. Additionally, families can immediately fulfill their food needs through urban farming, eliminating the need to visit markets or supermarkets. In addition to improving urban food security, gardening in urban areas has other health benefits. In addition to encouraging culinary exploration, access to cheap fresh fruits, especially in areas with few stores or supermarkets, can also help reduce food intake (Van et al., 2023).

Based on field conditions, the Bara-baraya Subdistrict, particularly Anggrek's KWT, has the potential of natural resources in the form of community yard land. Additionally, the soil consistency in Anggrek's KWT, Bara-baraya Subdistrict, is excellent for planting various plants, from ornamental plants, vegetables, to fruits. However, the existing space has not been maximally utilized. In addition to natural potential, the agricultural community of the Women Farmer Group (KWT) Anggrek in the Bara-baraya Sub District has great potential for resources. This farmers' group consists of 30 housewives. The development goal of Anggrek's KWT is agricultural innovation to meet nutritional and food diversity goals in line with the objectives of the Indonesian Ministry of Agriculture (Nursantio et al., 2020).

Anggrek's KWT is among the special women's groups that have demonstrated effectiveness in urban agriculture. In this regard, the benefits of hydroponic urban farming include increasing green space quantity, enhancing nutritional resilience, and empowering housewives. This represents one of the potential benefits of urban agriculture in the future and significantly enhances urban food security. The advantages of hydroponic urban farming include increasing closed green space quantity, enhancing nutritional resilience, empowering housewives, and improving family economics. This represents one of the long-term benefits of urban agriculture and significantly enhances urban food security.

Hydroponic urban farming can provide benefits for women such as the Women Farmer Group (KWT) Anggrek in Bara-baraya Subdistrict, Makassar City. In this downtown location, the women of the Women Farmer Group (KWT) learn urban farming utilizing hydroponic planting technology and have successfully practiced it (Wachdijono et al., 2019). The Women Farmer Group (KWT) Anggrek in Bara-baraya Subdistrict is capable of providing income for families, which is an achievement in itself and certainly provides

benefits to the family economy. Therefore, the advantages of urban farming, besides meeting family food security, also provide economic benefits and benefits for a better environment. As a community business, urban agriculture is often supported based on its potential to stimulate the economy of housewives, especially in the Women Housewives Group (KWT) Anggrek, through job creation, income enhancement, and small business growth.

In the Women Farmer Group (KWT) Anggrek experiencing economic pressure, the entrepreneurial potential of urban farming can lead to the creation of profitable businesses by the group of housewives. In addition to farming itself, farmer markets, distribution, consumer-supported farming businesses, and value-added product creation are examples of business opportunities related to urban farming. Moreover, efforts supporting urban farming activities in cultivation, processing, and distribution stages are also highly beneficial. Urban farming supports local food business incubators, food centers, producer marketing cooperatives, and other initiatives and contributes to a dynamic environment open to economic innovation (Wijaya, 2022).

The increase in household income in the form of implicit income helps save on vegetable purchase budgets, thus freeing up funds for other needs (improving household welfare). This research finding is in line with (Wulandari et al., 2019), stating that urban farming, including hydroponics, can be a significant source of income for women's groups in developing countries. In this study, it is evident that hydroponic urban farming provides opportunities for women's groups to efficiently produce and sell harvests, as well as reduce transportation costs and dependence on agricultural imports.

3.3 Factors influencing the success of hydroponic urban farming development in housewives groups

The level of knowledge and skills among the group of housewives in developing hydroponic urban farming will greatly affect its success. The more they understand the concepts, techniques, and maintenance of hydroponics, the greater the likelihood of success. The level of motivation and commitment among the group of housewives in developing hydroponic urban farming will also affect its success. The higher their motivation and commitment, the greater the likelihood of them continuing to learn and overcome challenges in developing hydroponic urban farming.

Urban farming serves as a catalyst that can influence the success of communities in fostering self-reliance. Particularly at the household level, urban farming can be an option to ensure food security. The development of urban agriculture has had a significant impact on community self-reliance.

Urban agriculture needs to be physically enhanced as it provides significant contributions and benefits in terms of green open spaces. Urban agriculture, also known as urban farming, is a way of cultivating crops and/or raising livestock within and around large cities/metropolitan areas or small towns to obtain food/other materials as well as additional economic needs, which include processing, harvesting, marketing, and distributing agricultural products. Below are the interview results with the local government regarding the factors influencing the success of hydroponic urban farming development (Table 4).

The success of implementing hydroponic urban farming in Anggrek's KWT requires program implementation and strategic utilization to achieve success in hydroponic urban farming development. The implementation of hydroponic urban farming programs requires factors that can influence program implementation to succeed. Factors that can affect the development of hydroponic urban farming include adequate knowledge and skills about hydroponics, which are crucial for the success of urban farming.

Table 4. Interview results: Factors of hydroponic urban farming success

Questions	Informant responses
How do mothers start hydroponic urban farming businesses? Coding B1	Coding B1.1 "The beginning of hydroponic cultivation started when our extension officer directed us to start growing hydroponically, and we also became increasingly aware that we should keep up with technological advancements. This is one of the evolving cultivation processes due to the advancement of technology". (Jumriati/4-11-2023)
Do mothers have specific knowledge and skills in hydroponic urban farming? Coding B2	Coding B2.1 "Regarding knowledge and skills, initially, we learned through self-study about how to manage hydroponics. However, since we also collaborate with the agricultural department, the government provides us with counseling and socialization about the process of managing hydroponic plants. Therefore, we become more knowledgeable and continue to develop this cultivation". (Jumriati/4-11-2023)
How do mothers sell the harvest products from hydroponic urban farming? Coding B3	Coding B3.1 "For selling vegetables like lettuce, we already have our own regular customers, one of them is Mr. Bur's shop on Gotong Royong Street and there's a branch in BTP. So, for crops like lettuce, once they are ready for harvest, we don't need to worry about finding buyers anymore because we already have regular customers. As for vegetables like water spinach, we consign them to vegetable collectors. Then, for chili peppers, Mr. Bur also takes them, but if the price drops, we sell them ourselves". (Enny/4-11-2023)
Does mothers receive support from family or the community in developing hydroponic urban farming? Coding B4	Coding B4.1 "We receive strong support from our families because on average, the housewives here only work at home, so we utilize our time for hydroponic farming activities. Certainly, this activity increases our knowledge; what we didn't know before, we now know. Especially for me, initially, I used to work, but due to COVID, I stopped working and decided to start gardening. Initially, I didn't like touching soil, but eventually, I came to enjoy it, especially with hydroponic cultivation". (Enny/4-11-2023)
Have mothers received training or assistance from the government or related institutions in developing hydroponic urban farming? Coding B5	Coding B5.1 "At the beginning of our hydroponic activities, we received assistance for tools and materials to start hydroponic cultivation from PLP2L, with 1 rack, and from Bank Sulselbar, with 3 racks. As for hydroponic cultivation training, we were given guidance on how to implement hydroponic systems". (Enny/4-11-2023)
How do mothers ensure the sustainability of hydroponic urban farming businesses? Coding B6	Coding B6.1 "We create a solid plan for our hydroponic urban farming business. This includes scheduling planting, managing nutrients, financial management, and equipment maintenance. With careful planning, we can optimize harvest yields and ensure the sustainability of our business". (Atyratu/4-11-2023)
Do members of Anggrek's KWT collaborate with other farmers in Makassar City to develop hydroponic urban farming? Coding B7	Coding B7.1 "Yes, we definitely collaborate with other groups or communities who have similar interests in hydroponic urban farming. This allows for the exchange of knowledge among the mothers involved in KWT and support among community members. Through collaboration and networking, we can obtain greater support and expand business opportunities". (Atyratu/4-11-2023)

Housewives need to understand the basic principles of hydroponics, cultivation techniques, nutrient regulation, and hydroponic plant maintenance. Furthermore, economic aspects are crucial for the success of urban hydroponic farming in household groups, which can be influenced by their ability to manage finances, generate income from selling harvests, and sustain business continuity. Moreover, support from the surrounding community, such as local government and educational institutions, can influence the success of urban farming in household groups. This support can come in the form of technical assistance, training, or market access. The most fundamental success factor is the importance of considering environmental factors in hydroponic urban farming. Environmental conditions, such as weather, temperature, and water quality, can affect the success of plant growth. Therefore, measures need to be taken to address these environmental challenges (Shobry, 2017). In addition to factors related to knowledge or skills, economic aspects, and environmental factors, the Anggrek Housewives Group (KWT) engages in activities that can contribute to the success of hydroponic urban farming development among housewife groups in Makassar City (Fig. 2).

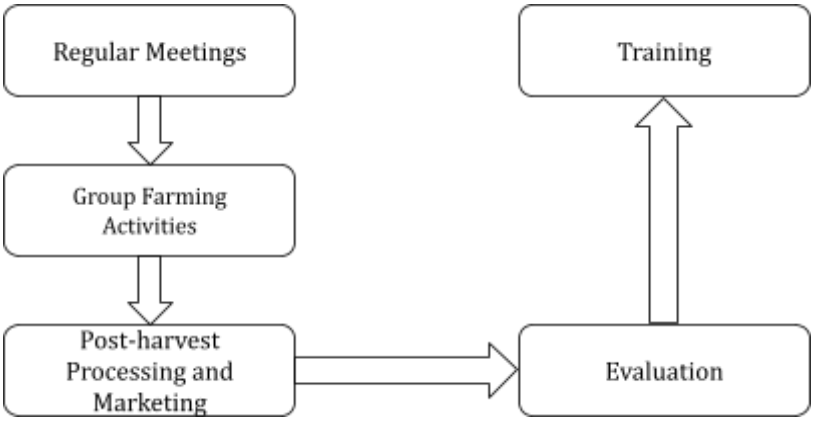

Fig. 2. Activities of the Anggrek Women Farmers Group (KWT)

These activities include regular meetings, group gardening activities, marketing, and training (Fig. 2). Regular meetings where each group holds regular meetings according to agreed schedules, ranging from weekly, bi-weekly, to monthly. These meetings serve as forums for discussion, exchanging ideas, providing opinions, and sharing experiences. They cover all aspects related to female farmer activities such as meeting schedules, duty schedules, participant representation for training, planting schedules, commodities, technology used, and harvest schedules.

Group gardening activities carried out by the Anggrek Women Farmers Group include: (1) Preparation of seeding and planting that begins with land clearing and seeding; (2) Maintenance activities during seeding and planting are carried out by participating housewives according to duty schedules. Maintenance includes watering and weeding; and (3) harvesting that is done collectively by the members of the Anggrek Women Farmers Group. Newly harvested vegetables are mostly sold collectively to neighbors. This is done to cover operational costs in cash collectively. In line with research (Oktarina et al., 2020), there is an increase in the market for organic agricultural products, thus high-value organic farming needs to be developed.

Post-harvest processing and marketing there processed products from the Anggrek Women Farmers Group vary in the form of food and beverages. Food products include spinach chips, cassava chips, and chili sauce. d) Training there are numerous training sessions related to urban farming conducted by the Department of Agriculture, Food Security Agency, community, and guest speakers. Types of training attended include: (1) Hydroponic training with speakers from the Hydroponic Community of Makassar City (HKM); (2) Training on making local foods such as traditional cakes; and (3) Use of natural dyes such as cocovine. (4) Vegetable Cultivation Training (BBP2TP).

Apart from the factors influencing the success of hydroponic urban farming development in household women's groups, various hydroponic urban farming programs in Anggrek's KWT are intended to achieve economic self-reliance to improve family economics and food security, thus creating urban resilience in facing future vulnerabilities (Aditya & Zakiah, 2022; Malik et al., 2021; Atmaja et al., 2020). Urban farming has emerged as a response to many urban life-related issues, including diminishing agricultural land due to development, increasing food needs in urban areas, environmental pollution due to pollutants, and economic crises due to COVID-19 (Wibowo et al., 2021; Silitonga et al., 2022; Suantika et al., 2018; Wunarlan et al., 2023). This has prompted individuals with agricultural skills and knowledge to capitalize on opportunities by optimizing the potential of available resources in their surroundings. The aim is to cultivate vegetable crops on limited and neglected land optimally as urban farming.

Therefore, the ability to meet food needs independently and the capacity to improve family economics will reduce barriers to food distribution in urban areas (Hardiana et al., 2021; Irham et al., 2021). Growing food in urban areas is becoming an increasingly popular and healthy lifestyle choice. The main reason is that most urban farming uses organic cultivation techniques, avoiding the use of synthetic fertilizers and pesticides. Urban farming can easily adopt different planting systems in limited land through hydroponic technology, thus creating a healthy and comfortable living environment (Prayoga et al., 2020; Novira et al., 2019).

4. Conclusions

The findings indicate that hydroponic urban farming has significant potential to positively contribute to enhancing the economic self-reliance of household groups led by women. By utilizing hydroponic farming methods in urban environments, adequate yields can be obtained to meet family needs, thus enhancing economic self-reliance. Moreover, there are factors influencing the success of hydroponic urban farming development among household groups that are important aspects to consider. A thorough analysis of these factors, including technical, social, and economic aspects, environmental factors, and government support, will provide a better understanding of how to optimize the implementation of hydroponic urban farming among urban household women. Focusing on the analysis of urban household women's self-reliance through hydroponic urban farming is highly relevant to the economic challenges faced by families in urban environments. The results of this research are expected to provide both theoretical and practical foundations for policy development that supports and promotes hydroponic urban farming to enhance family economies, especially among household women groups.

Recommendations for the group of housewives involved in the Anggrek Women Farmers Group to be more productive in utilizing waste materials as hydroponic growing media. Therefore, the self-reliance of housewives can be further enhanced if urban farming becomes more productive. To increase public knowledge about hydroponic plants and their processing, urban housewives engaged in farming should play a more active role in the hydroponic vegetable processing industry.

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Author Contribution

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