

Study of Social Capital and Institutional Farm Women in the Development of Urban Farming in Makassar City

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Abstract

Urban farming has emerged as a strategic response to the decline of agricultural land in urban areas. However, the role of women's farmer institutions and social capital in its development remains underutilized. This study aims to analyze the influence of social capital and women farmer institutions on the development of urban farming in Makassar City. Conducted from July to September 2024 in Tello Urban Village, the study employed purposive sampling involving 20 active women farmer group members. Data were analyzed using descriptive statistics and multiple linear regression. The results reveal that social capital characterized by sharing information, coordinating activities, and making collective decisions plays a significant role in supporting urban farming development. Similarly, women farmer institutions function effectively as cooperation, learning, and production units, contributing substantially to urban agriculture. These institutions not only facilitate collaboration among members but also enhance women's capacity through collective learning, innovation, and the processing of agricultural products with added value. The synergy between social capital and institutional strength fosters trust, participation, and cooperation, which are essential for maintaining the sustainability and resilience of urban farming systems. The findings further indicate that both factors have a moderate but meaningful influence on the growth of urban farming, suggesting that additional external supports such as government facilitation, resource access, technological innovation, and policy strengthening are still required. The study concludes that enhancing institutional capacity and reinforcing social capital are crucial to achieving sustainable, inclusive, and community-driven urban farming development in Makassar City, which in turn can improve household welfare and strengthen food security in urban environments.

Keywords: Social capital, Institutional farm women, Urban farming, Sharing information, Coordinating activities

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1. Introduction

Makassar City is the capital city of South Sulawesi Province that faces various urban problems, such as poverty due to lack of skills, increasing unemployment rates, and conversion of agricultural land into settlements or infrastructure, such as toll roads, housing, and buildings (Prihatin, 2015). This condition needs the government's attention in an effort to improve the socio-economic conditions of the community and the urban environment. One of the solutions presented is urban farming as an alternative in realizing sustainable cities (Armansyah et al., 2024) and maintaining environmental balance and improving the welfare of urban communities (Abdullah et al., 2017). This concept is also expected to overcome the problem of shrinking productive agricultural land and can only be successful if the community has good social capital (Natama et al., 2024).

Urban farming is an agricultural activity in urban areas that utilizes narrow land by relying on skills, expertise, and innovation in cultivating plants (Kamaruddin et al., 2020). This agricultural system can create environmental balance and urban ecosystems and is part of the Eco City concept. Urban farming emerged as a response to the decreasing agricultural land in urban areas, so the government through public policy encourages urban farming programs. The existence of urban farming allows people to utilize narrow land, such as home yards, for plant cultivation to meet their daily needs and increase household economic income (Lutfiah et al., 2023; Wulandari et al., 2023). Common types of plants cultivated in urban farming include vegetables, medicinal plants, and ornamental plants.

In addition to economic benefits, urban farming also provides social and environmental benefits. Afriyanni et al. (2024) stated that urban farming is beneficial in providing food stability, as a medium of learning for the community, preserving the environment, creating jobs, and minimizing air pollution. However, until now, values related to nature and the environment have not been considered (Yang and Yagi, 2024). It was even found that urban farming is less ecologically sustainable and only moderately socio-economically sustainable (Abdullah et al., 2015; Fitri et al., 2024). This needs to be a common concern. The development of urban farming requires the support of agricultural institutions, both institutionalized and those formed independently on the basis of common interests. One of the agricultural institutions that play an important role in the development of urban farming is the institutional women farmers.

Institutional women farmers are platforms that give women the chance to engage in the agriculture industry. The government shows its commitment to women's empowerment. Women empowerment is the advancement of women and their acceptance and inclusion in decision-making processes (Shettar, 2023). It also means giving them equal opportunities to grow and develop in society. Institutional women farmers are vital in advancing gender equality in the agriculture industry to enhance the caliber of human capital. This is a form of women's involvement in improving family welfare and making a real contribution to the household through agricultural activities (Nurmayasari and Ilyas, 2014).

However, limited human resources and weak institutional women farmers in the face of agricultural modernization are still the main challenges (Kencana et al., 2022; Syarif, 2018). Along with technological developments in the agricultural sector, farm women need to improve their knowledge and skills in order to optimally utilize available resources. In carrying out urban farming activities, farm women's institutions require material capital (money, technology, and land) and non-material capital such as social capital (Ibrahim et al., 2017). Urban and rural communities have differences in terms of social dependence, where rural communities rely more on close social relationships compared to urban communities. Weak social capital can inhibit the spirit of mutual cooperation, exacerbate poverty, increase unemployment, and hinder the improvement of social welfare (Busthanul et al., 2021).

Social capital is also an important factor in building associations and cooperation between members within the institution. Putnam (1995) defines social capital as a set of values or norms shared by institutional members, thus enabling cooperation. Meanwhile, Kurniawan (2018) said that social capital is a valuable asset that can foster mutual trust in building cooperation and coordination in achieving social and economic benefits. Government support in supporting the sustainability and development of urban farming is very important. So far, the local government has supplied materials for activities such as providing planting media, seeds, seedlings, and fertilizers as well as mentoring support (Amir and Saidin, 2020; Rosmiati et al., 2023). Some previous studies on urban farming are mostly associated with food security, adoption of technological innovations, and consumer preferences

(Badami and Ramankutty, 2015; Califano et al., 2024; Gallaher et al., 2013; Mead et al., 2024; Yuniarsih et al., 2024). These studies did not explore the influence of social capital and institutional farm women in the development of urban farming.

Researchers have conducted a study examining the role of social capital and its impact on urban agriculture development. Additionally, this research incorporates the variable of farm women's institutions as a crucial factor in the success of urban agriculture initiatives. By employing a quantitative approach, this study offers new insights into how social capital and institutional support for women farmers influence urban agriculture. The findings are expected to contribute to the sustainable success of urban farming concepts. In practice, urban farming enhances household economies and improves skills in agricultural management within urban settings. Moreover, integrating an institutional approach into urban farming can aid in the creation of green urban spaces that provide many benefits for the city and the people living in the city (Yazgan and Khabbazi, 2013). Based on this premise, the study aims to analyze the role of social capital and women's farming institutions in the growth of urban agriculture in Makassar City. Furthermore, it seeks to assess the impact of these factors on urban farming development in the region. This study also aims to examine the influence of social capital and institutional women farmers on the development of urban farming in the location.

2. Materials and Methods

The research was conducted in Tello Urban Village, Panakkukang Subdistrict, Makassar City from July to September 2024. Sampling was done by purposive sampling with the criteria that all members of the Women Farmers

Table 1. Variables, indicators and statement scales

Variable/Indicators		Statement scale
The Role of Social Capital		
- Sharing information	1.	Regularly attend group meetings
	2.	Be open to each other in conveying information about urban farming
- Coordinating activities	1.	There is a division of tasks for urban farming activities.
	2.	Coordination between members runs well and all members are responsible for their respective tasks.
- Making collective decisions	1.	Deliberation is carried out before making decisions
	2.	Involvement in making decisions about cultivation and determining selling prices
Institutional role of farm women		
- Cooperation unit	1.	Group activities are carried out cooperatively.
	2.	We often work together in processing and marketing agricultural products.
- Learning unit	1.	Attending training or seminars held by the Group.
	2.	The Group gives me new knowledge in the field of agriculture and evaluates each activity.
- Production unit	1.	Involved in cultivating plants and producing processed products from agricultural products
	2.	The processed products produced have a selling value
Development of urban farming		
- Ecological aspects	1.	The women's farmer group makes efforts to reduce non-organic waste such as plastic, bottles, and the like.
	2.	The women's farmer group utilizes organic waste such as food or plant waste to be used as compost.
- Social aspects	1.	The activities of the women's farmer group have improved the quality of human resources (HR) in managing urban farming.
	2.	The women's farmer group cooperates or collaborates with the local government and the community in developing urban farming.
- Economic aspects	1.	The women's farmer group markets production results as an effort to increase household income.
	2.	Income from the sale of group products has increased from year to year.

The score weights used are as follows:

Strongly Agree (SS)	= 4
Agree (S)	= 3
Disagree (TS)	= 2
Strongly Disagree (STS)	= 1

Institution are active and involved in every activity carried out. The sample used in this study was 20 housewives who were active members of women farmers institution, a community-based legal entity formed through a women's empowerment program by the Makassar City Agriculture Service since 2017. Most of the members who were respondents in this study were aged between 35–55 years, with the majority of their last education level being high school/equivalent. All respondents were married women, with the majority working as housewives and having more than 5 years of informal farming experience. All of them had joined as active members for more than one year. To analyze the role of social capital and institutional farm women, the method used is qualitative descriptive analysis. In this study, measurements were made using a Likert scale. The statement items given to respondents include several indicators, such as information sharing, activity coordination, and collective decision making for the social capital variable. Indicators of cooperation, learning, and production for the institutional variable. Furthermore, for the urban farming development variable with indicators of ecological, social and economic aspects. The statement scale used can be seen in *Table 1*.

Furthermore, with the number of respondents as many as 20 institutional members of farm women, it can be assumed that the highest score that will be obtained is $20 \times 4 = 80$, and the lowest score is $20 \times 1 = 20$. then the range can be calculated as follows:

$$\text{Range} = \frac{\text{Highest score} - \text{Lowest score}}{\text{Range score}} \quad \text{Range} = \frac{80 - 20}{3} = 20 \quad (\text{Eq. 1})$$

Based on the range above, to see the role of social capital and institutional farm women in the development of urban farming, using the assessment categories as listed in *Table 2*.

Table 2. Categories of assessment of the role of social capital and institutional women farmers on the development of urban farming in Makassar City

Score range	Category value
61 - 80	High
41 - 60	Medium
20 - 40	Low

Furthermore, to determine the effect of social capital and farm women's institutions on the development of urban farming in Makassar City, it was analyzed using multiple regression analysis. The formula for multiple linear regression data analysis can be seen as follows:

$$Y = a + b_1X_1 + b_2X_2 + e$$

Description:

- Y = Development of urban farming
- X₁ = The Role of Social Capital
- X₂ = Institutional role of women farmers
- a = Constant value
- b₁ = Regression coefficient value X₁
- b₂ = Regression coefficient value X₂
- e = Standard error

3. Results and Discussion

3.1. The Role of Social Capital and Institutional of Women Farmers in the Development of Urban Farming in Makassar City

It has been previously explained that social capital and institutional women farmers are important aspects in the development of urban farming. Based on the research conducted, it was found that the role of social capital is in the high category in the development of urban farming in Makassar City as the research location. In general, the role of social capital can be seen in *Table 3*.

Table 3 explains that the role of social capital as sharing information obtained a score of 70 with a high category. The next indicator is coordinating activities obtained a score of 69 with a high category, and the indicator of making collective decisions obtained a score of 65 with a high category. This data shows that the role of social capital plays an

important role in developing urban agriculture. The role of social capital can be seen in the activities carried out in farm women's institutions that have direct responsibility in running the urban farming program. The existence of social capital binds or unites each member of the institutional women farmers in developing urban agriculture.

Table 3. The Role of Social Capital in the Development of Urban Farming in Makassar City, 2024

No.	The Role of Social Capital	Score	Category
1.	<i>Sharing Information</i>	70	High
2.	<i>Coordinating Activities</i>	69	High
3.	<i>Making Collective Decision</i>	65	High

The values embodied in social capital, such as social networks, trust, and norms, are what can become social glue so that a cooperative relationship is built, a high level of cooperation and involvement in making decisions together. because overall the institutional members of farm women are active in sharing information such as holding regular meetings every month, coordinating each activity by dividing tasks by each member and the involvement of all institutional members in making decisions concerning the development of urban agriculture in Tello Urban Village, Pannakkukang District Makassar City. This is in line with Fadliadi et al. (2023), which shows that the role of social capital as a value that contributes to strengthening collective roles, such as trust shown through openness, honesty in providing information and moral and material assistance.

The facts in the field show that in carrying out urban farming development activities, institutional women farmers actively share information among members through regular monthly meetings. This meeting aims to discuss various matters related to the development of urban farming. On the other hand, members of the institutional women farmers apply regional division in urban farming management, such as dividing the gazebo in each area coordinated by the head of the neighborhood. With this system, the head of the neighborhood can coordinate the members of the institutional women farmers involved in urban farming management and ensure that all members are involved in decision-making through deliberation.

Furthermore, the institutional role of farm women was found to have a high role in the development of urban farming in Makassar City. The score of the institutional role of women farmers in the development of urban farming can be seen in *Table 4*.

Table 4. The Role of institutional women farmers in the Development of Urban Farming in Makassar City, 2024

No.	The Role of Women Farmers Institutions	Score	Category
1.	Cooperation Unit	74	High
2.	Study Unit	71	High
3.	Production Unit	66	High

Based on *Table 4*, it can be explained that the institutional role of farm women as a cooperation unit scored 74 with a high category. The next indicator, the learning unit, scored 71 with a high category, while the production unit scored 66 with a high category. This data shows that the level of institutional role of farm women can be said to be high and has great potential in developing urban agriculture. This is due to the activeness and participation of members of institutional women farmers in managing urban agriculture. In addition, the farm women also organize educational activities, such as agricultural seminars by presenting extension workers, as well as processing production into value-added products, such as spinach chips and chili powder.

Various activities are carried out by institutional women farmers to demonstrate their role as learning units. Among other things, the institutional women farmers conducts training to improve knowledge in developing urban agriculture, such as seminars, discussion rooms, and other activities. In addition, institutional women farmers also provide learning spaces for their members to improve their skills in processing agricultural products, for example by making spinach chips and chili powder so that the products have added value.

The role of institutional women farmers as cooperation units can be seen in their efforts to establish relationships with local governments, such as the Agriculture Office and Food Security Office, to increase production and sales. This is in line with research by Pribadi et al. (2021), which shows that institutional women farmers act as a vehicle for

cooperation in community economic empowerment efforts. In addition, this research is also in line with the research of (Rahmadanih et al., 2020), which states that institutional women farmers have an important role in helping the economy and creating household food security.

3.2. The Influence of the Role of Social Capital and Institutional of Women Farmers in the Development of Urban Farming in Makassar City

Social capital is networks, norms and trust (Fukuyama, 1995). These elements become resources for individuals embedded in social interactions and facilitate coordination for mutual benefit (Kassahun, 2010; R. D. Putnam et al., 1993). Grootaert et al. (2004) said that these elements of social capital play a role through the mechanisms of sharing information, coordinating activities and making collective decisions in an institution so that the role of institutions can contribute to the development of urban farming in urban areas. In conducting a study of the influence of social capital and institutional women farmers on the development of urban farming in Makassar City, the first step is to test the validity and reliability to see the relationship between variables and the relationship between variables and their indicators. Furthermore, it is analyzed using multiple regression analysis (t test, F test and coefficient of determination).

Validity and Reliability Test

The initial step taken to check and ensure that the indicators used can represent the variables under study is the measurement model test with the validity and reliability test approach. The validity and reliability test results can be seen in *Table 5*.

Table 4 explains that all indicators used are declared valid because the value of r count \geq from r table (0.443). Likewise, the variables used are declared reliable because the Cronbach's alpha value is \geq from r table (0.468). If $\alpha > 0.90$ then the reliability is perfect. If α is between 0.70 - 0.90 then reliability is high. If α is 0.50 - 0.70 then reliability is moderate. If $\alpha < 0.50$ then low reliability (Sanaky et al., 2021). The results of this test indicate that the role of social capital and institutional farm women are in the high category, while the urban farming development variable is in the moderate category.

Table 5. Validity and Reliability Test Results of Research on the Influence of the Role of Social Capital and institutional women farmers on Urban Farming Development in Makassar City, 2024

Variable / Research Indicator	r count	Cronbach's alpha
The Role of Social Capital (X_1)		
- Sharing information	0.487	0.691
- Coordinating activities	0.538	
- Making collective desicions	0.745	
Institutional role of farm women (X_2)		
- Cooperation unit	0.657	0.674
- Study unit	0.582	
- Production unit	0.539	
Development of urban farming (X_3)		
- Ecological aspects	0.490	0.784
- Social aspects	0.541	
- Economic aspects	0.566	

Partial Significance Test Results (t Test)

The t test is conducted to measure whether the independent variable affects the dependent variable. The criteria used in the t test are; if t count $>$ t table, then the hypothesis in this study is accepted, meaning that there is an influence of independent variables, namely the role of social capital (X_1) and institutional farm women (X_2) on the development of urban farming (Y). Conversely, if t count $<$ t table, then the hypothesis is rejected, meaning that there is no influence of the independent variable (X) on the development of urban farming. If the significant value is obtained < 0.05 then the hypothesis in this study is accepted and if on the contrary then the hypothesis is rejected. The t statistical test can be seen in *Table 6*.

Table 6. Results of the t-test of the Effect of Social Capital and Institutionalization of Women Farmers in the Development of Urban Farming in Makassar City, 2024

Variable	Coefficients	Std. Error	t	Sig
The Role of Social Capital (X ₁)	0.412	0.197	2.091	0.051
Institutional role of farm women (X ₂)	0.581	0.183	3.168	0.005

Table 6 shows that the variable role of social capital obtained a t count of 2.091 with a t table value of 1.740. It is known that t count 2.091 > t table 1.740 illustrates the role of social capital, which has an influence on the development of urban farming. The significance value of 0.05=0.05 indicates that the role of social capital includes having an influence even though the level of significance is weak because it is at the same level as the significant standard. So it can be concluded that the role of social capital is also very important for the development of urban farming in Tello Urban Village, Makassar City. This is in line with research Subangkit et al. (2020) showing that social capital can be one of the variables in the development of urban farming in which there are bonds of trust, social institutions and social networks, which can become social glue so that social capital can play a role in shaping enthusiasm and commitment in developing urban farming. The field findings revealed that the coordination between stakeholders made an extraordinary contribution in implementing the “urban garden in the alley” program so that it had an impact on the provision of greenery, beautiful scenery, clean alleys, socio-economic inclusion, and had an effect on sustainable environmental recovery. This is in line with the objectives of the urban farming program (Toku et al., 2024).

As for the variable institutional role of farm women (X₂), the t count is 3.168 > t table 1.740. These results illustrate that the institutional role of farm women has an influence on the development of urban farming. The significance value of 0.00 < 0.05 indicates that the institutional role of farm women has a significant influence because it is below the significant standard. The results of this study state that the institutional role of farm women is also very important to the development of urban farming. This is in line with the research of Nugroho et al. (2022) showed that institutional women farmers contributed positively to the practice of urban farming and became pioneers to encourage efforts to achieve food security.

The role of institutional women farmers can be seen in increasing the knowledge of housewives in utilizing the yard and knowledge about urban farming. It also acts as a vehicle for cooperation and a vehicle for production. Indirectly, the existence of institutions can affect the ability of housewives to work together and build coordination. The role of farm women's institutions as production units can be seen in the activities of farm women's institutions as production units play a role in increasing agricultural productivity, adding economic value to agricultural products, and improving the welfare of members and their families. Thus, this institution can be a key driver in urban agriculture-based economic development in Makassar City in supporting the development of food security and sustainable agricultural systems.

Simultaneous Significance Test Results (Uji F)

The purpose of the F test (simultaneous) is to ascertain if the independent and dependent variables have a simultaneous impact on one another. The provisions are considered significant if the sig value is less than 0.05, and the significance threshold is set at $\alpha = 5\%$. F count > F table indicates that the independent variable has an impact on the dependent variable, while F count < F table indicates that the independent variable has no effect on the dependent variable. Table 6 displays the outcomes of the F test.

Table 7. Results of F Test of the Influence of Social Capital and Institutional of Women Farmers in the Development of Urban Farming in Makassar City, 2024

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.354	2	4.677	5.7429	0.012
Residual	13.845	17	0.814		
Total	23.20	19			

Based on the ANOVA output table shows that the calculated f value of the variable role of social capital and institutional role of farm women is $5.7429 > F$ table and institutional role of farm women is $5.7429 > F$ table 1.7396. Based on the significance value, it is known that the significant value of the variable role of social capital and the institutional role of farm women is $0.01 < 0.05$. It can be concluded that the variable role of social capital and the institutional role of farm women simultaneously affects the urban farming development variable.

Determination Coefficient Test (R^2)

The degree to which the independent variables' contributions to the regression model may account for the variance in the dependent variable is indicated by the coefficient of determination (Ghozali, 2016). To determine the impact of the dependent variable on the dependant, the R^2 test was used (Akbar et al., 2023). Chin (1998) states that an R-Square value is classified as weak if it is greater than 0.19 but less than 0.33, moderate if it is greater than 0.33 but less than 0.67, and strong if it is greater than 0.67. Table 8 displays the findings of the coefficient of determination data test.

Table 8. Results of the Determination Coefficient Test of the Influence of Social Capital and Institutional of Women Farmers in the Development of Urban Farming in Makassar City, 2024

Model	Multiple R	R Square	Adjusted R Square	Standar Error
1	0.634	0.403	0.333	0.902

Table 8 indicates that the coefficient of determination (R^2) is 0.403 based on the test findings of the independent and dependent variables. This indicates that 40.3% of the dependent variable, urban farming development, is influenced by the independent variables of social capital and institutional farm women. However, other factors not included in this study have an impact on the remaining 59.7%. The results of this study illustrate that the development of urban farming can be influenced by the role of social capital and farm women's institutions are in the moderate category. Overall, social capital acts as a foundation that strengthens institutional structures and functions. With strong social capital, the institution can operate more effectively through increased cooperation, communication, and trust among its members, so that indirectly, the institution can play a maximum role as a unit of cooperation, learning unit and production unit in the development of urban farming in urban areas.

4. Conclusions

The results showed that the role of social capital as sharing information, coordinating activities and making collective decisions was in the high category. Likewise, the role of institutions as cooperation units, learning units, and production units is in the high category. Additionally, the findings indicate that the role of social capital and farm women's institutions significantly influence the development of urban farming in urban areas. Coordination, collaboration, and collective decision-making among institutional members are enhanced by social capital, while institutional farm women function as the main driving factor of the urban farming development program. However, this study shows that the effect is still in the moderate category, so the researcher suggests that future studies include other variables that influence the development of urban farming in urban areas.

Ethical Statement

There is no need to obtain permission from the ethics committee for this study.

Conflicts of Interest

We declare that there is no conflict of interest between us as the article authors.

Authorship Contribution Statement

Concept: Jairin, J., Akbar, A.; Design: Sumarni, S.; Data Collection or Processing: Jairin, J.; Statistical Analyses: Jairin, J., Rusman, M.A.A.; Literature Search: Lukman, H.; Writing, Review and Editing: Jairin, J., Akbar, A., Tahir, R.

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