The Influence of Food Crop, Livestock, and Fishery Sub-Sectors on Gross Regional Domestic Product (GRDP) of Malang Regency

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A B S T R A C T

The agricultural sector is an important sector in supporting the increase of Gross Regional Domestic Product (GRDP), especially the food crops, livestock, and fisheries sub-sectors in Malang Regency. This study aims to identify the contribution of the food crops, livestock, and fisheries sub-sectors in Malang Regency to GRDP in Malang Regency. The research method used is descriptive quantitative with secondary data obtained from the Central Statistics Agency of Malang Regency. The results of the study show that the independent variables of food crops, livestock, and fisheries simultaneously have a significant effect on the dependent variable GRDP. The partial test results show that the food crops and livestock sub-sector variables have a positive and significant effect on the dependent variable. The fisheries variable has a positive and insignificant effect on the dependent variable. The results of the determination coefficient test of 0.878 indicate that 87.8% of the variation in GRDP can be explained by the food crops, livestock, and fisheries sub-sectors, while the rest is influenced by other factors. From the research that has been done, the researcher suggests that the government should optimise the production of food crops, livestock, and fisheries production, because these three sub-sectors are potential sub-sectors in the agricultural sector in Malang Regency.

INTRODUCTION

Economic growth indicates an increase in the production of goods and services in an economy, so that economic growth is an important indicator in analysing economic development (Amiri, et.al., 2015; Soseco, et.al., 2023). Economic development in a region originates from the government to direct the achievement of established targets. This can be seen in the development planning that has been formulated by the government, so that development planning can be implemented in stages and sustainably. Development is an effort or series of efforts for growth and change that are planned and consciously carried out by a nation, state, or government, towards modernity in the context of national development (Nabila & Soseco, 2025).

The development plan contains policy objectives and principles, including increasing the rate of income growth and employment opportunities, striving for equitable development in each region, balancing development between regions, and changing the economic structure so that it is not one-sided. Tambunan (2010) explained that agricultural and non-agricultural activities interact in a complementary manner in rural economic growth. A report by Dinas Tanaman Pangan Holtikultura dan Perkebunan Kabupaten Malang (2017) mentioned that most of Malang Regency is agricultural land. Good planning requires reliable data and information, particularly timely and accurate statistical data. The function and role of statistics within the framework of regional autonomy are crucial, especially in the current era of globalization, which places information and data as the basis for addressing increasingly fierce competition. Appropriate policies can be made if they are based on accurate and timely statistical information. This information not only shows development progress but also serves as an alternative solution to address problems or challenges. The increase in Gross Regional Domestic Product (GRDP) is one of the measuring tools used to illustrate the level of development success (Badan Pusat Statistik, 2020).

The agricultural sector is quite important in supporting the increase in Malang Regency's Gross Regional Domestic Product (GRDP). The agricultural sector must continue to be developed, considering its role in providing food for the community and providing raw materials for several industries. If the agricultural sector experiences a surplus, the income can be channelled into savings and investment (Kurniawan, 2015; Manaraja, et.al., 2023). The agricultural sector has several supporting subsectors, including food crops, horticulture, plantations, fisheries, and livestock. These

subsectors produce output that contributes significantly to the agricultural sector's contribution to Malang Regency's GRDP (Badan Pusat Statistik Kabupaten Malang, 2024).

In addition to supporting GRDP, the agricultural sector is a food-producing sector for the community, as stipulated in Law of the Republic of Indonesia Number 18 of 2012, which states that the state is obliged to provide food for the community and guarantee food availability, affordability, food security, both nutritional and quality, and the realisation of food security. The food crop sub-sector also plays a crucial role in national development, becoming the primary target for strengthening food supplies and food diversification in development policies. Policies related to strengthening food supplies are intended to increase domestic production of staple food commodities, so that the production of food crops that are the primary targets that must be increased include rice, corn, and soybeans. In addition to rice, corn production continues to increase to meet the needs of livestock feed and the needs of small industries that use corn in the production process. Meanwhile, the increase in soybean production is to meet the needs of tofu and tempeh production, as well as other products that use soybeans as raw materials (Bertham, et.al., 2011; Hafizah, et.al., 2021).

The livestock sub-sector is an integral part of the agricultural sector, aiming to increase the income and standard of living of farmers in general by increasing livestock production, both in quantity and quality. Livestock in Malang Regency is one of the community-based businesses that serves to increase the income of the people in Malang Regency (Dinas Tanaman Pangan Holtikultura dan Perkebunan Kabupaten Malang, 2017). The livestock sub-sector is divided into large livestock, small livestock, and poultry. If livestock production increases, its contribution to Malang Regency's GRDP will also increase. The fisheries sub-sector in Malang Regency is also included as one of the components in increasing economic growth in Malang Regency. The Malang Regency Fisheries Service provides various types of commodities that can be used by the community for fish farming. The Malang Regency government provides equipment to facilitate fishermen in fishing, such as fishing boats, fishery production facilities, fishing operators, fishing rods, and fish catching equipment (Badan Pusat Statistik Kabupaten Malang, 2024; Wulandari, et.al., 2018).

In addition to the food crops sub-sector, the livestock sub-sector and the fisheries sub-sector also influence the formation of GRDP in Malang Regency. Similarly, the food crops sub-sector, the livestock sub-sector, and the fisheries sub-sector also play an important role in meeting the community's food needs. The economic structure will provide an overview of each sector's role in the formation of GRDP in a region. Data obtained from the Malang Regency Statistics Agency (BPS) shows that the food crops, livestock, and fisheries sub-sectors have experienced an increase. If the contribution of the food crops, livestock, and fisheries sub-sectors to the agricultural sector continues to increase, their influence on the formation of GRDP in Malang Regency will also increase.

A report by the World Bank (2021) showed that GRDP is the total value of all final output produced by an economy at the regional level (whether by residents or residents from other regions residing in the area). GRDP at constant prices is often referred to as real GRDP and reflects the value of output calculated at prices in a particular base year. This method of calculation at constant prices eliminates the influence of prices or inflation; thus, it is said to show real (actual) value. GRDP at current prices shows the added value of goods and services calculated using prices that apply each year. GRDP at current prices is intended as an illustration to be able to see shifts and economic structures. Meanwhile, GRDP at constant prices is intended to see the level of economic growth from year to year.

Food crops are one of the variables taken in this study, as Diani, et.al. (2021) explained, food crops are anything that grows and can be eaten or consumed by both humans and animals derived from plants containing carbohydrates. The activities of the food crop sub-sector in the agricultural sector are producing rice and secondary crops. In relation to the agricultural sector and GRDP, the food crop sub-sector is a sub-sector that is related to the figures obtained in GRDP. The food crop sub-sector also has links and contributes to other economic sectors. One reason why the food crop sub-sector is related to other sectors is that most of the main raw materials for the food industry come from food crop production. So, if there is an important role for food crops in other economic sectors, it will later increase its contribution to GRDP income from the sale of food crop production, food crops are also able to create new jobs, and the creation of added value because of their contribution to GRDP.

The livestock subsector is a component of the agricultural sector that can support development, particularly in the economic sector. Its important roles include providing meat, eggs, and milk to meet the public's demand for nutritious animal protein sources and as raw materials for industry (Darmawan, et.al., 2018). The livestock sub-sector has a strategic role in the development of

the agricultural sector, namely, to strengthen food security to meet the need for animal protein, empower the community's economy and spur regional development. The livestock sub-sector has a relationship with GRDP, namely: livestock to provide food, especially to meet the people's need for animal protein, livestock as a source of income and employment opportunities, livestock for sustainable agricultural businesses and environmental improvement, and livestock for alleviating society from poverty.

Badan Pusat Statistik Kabupaten Malang (2024) states that the fisheries sector includes commodities from marine fisheries, public waters, ponds, pools, rice fields, and cages, as well as simple fishery product processing. The types of fisheries obtained in fisheries production are aquaculture and capture fisheries. In addition to the food crop sub-sector, the fisheries sub-sector also has relationships with other economic sectors and contributes to the GRDP. In addition to being sold in traditional and modern markets, fisheries production also serves as the main raw material for the food industry. Thus, fisheries production is also similar to food crops; both are sub-sectors needed by other economic sectors. Therefore, if the fisheries sub-sector plays a role as the main raw material in the food industry, then fisheries production will help contribute to the GRDP.

Various studies have found a positive relationship between the development of the food crops, livestock and fisheries sub-sectors and GRDP in a region, as found by Haris, et.al. (2017), Kurniawan (2015), and Utami, et.al. (2023). Various results found from previous research show that variables that have a positive influence or variables that are in the same direction in this research can be a reference for strengthening the research. However, several other researchers showed negative and significant results, such as Manaraja et al. (2023), Gitawati (2018), Akhsan (2023), and Tarida (2015). These various studies help researchers understand that not every result found in a study necessarily has a positive effect. Negative results in this study can help researchers complete their research.

DATA AND METHODS

This study uses secondary data obtained from the Central Statistics Agency (BPS) in Malang Regency from 2016 to 2020. The data collection method used in this study is a statistical dataset. The data collected relates to the food crops, livestock, and fisheries subsectors in Malang Regency. After conducting model specification and statistical tests in this study, a classical assumption test was conducted to determine whether the model used in this study encountered classical assumption issues. The classical assumption test consists of:

a. Normality Test
   A normality test is conducted to determine whether a regression model, an independent variable, a dependent variable, or both, has a normal or non-normal distribution. If a variable is not normally distributed, the statistical test results will be degraded. Data normality can be tested using the one-sample Kolmogorov-Smirnov test. If the significance value is above 5% or 0.05, the data is normally distributed. Conversely, if the one-sample Kolmogorov-Smirnov test yields a significance value below 5% or 0.05, the data is not normally distributed.
b. Multicollinearity Test
   The multicollinearity test aims to test whether the regression model contains correlations between independent variables. If there is a correlation between independent variables, then there is a multicollinearity problem in the model. A good model does not contain correlations between independent variables, namely the Agriculture Sector, the Livestock Sector, and the Fisheries Sector. Multicollinearity can generally be determined by examining the correlation matrix of the independent variables. If a correlation matrix of less than 0.8 is present, multicollinearity is not present.
c. Heteroscedasticity Test
   The heteroscedasticity test aims to determine whether the regression model exhibits unequal variances from the residuals of one observation to the residuals of another observation. If heteroscedasticity is found in the model, the model is considered inefficient, even if it is unbiased and consistent. In panel data, heteroscedasticity can be detected using the Glesjer test. The Glesjer test is used to regress the absolute value of the residuals against the independent variables. If the probability of each independent variable is greater than 0.5, heteroscedasticity is considered absent.

Multiple Linear Regression Analysis

This study uses multiple regression analysis to examine the effect of two or more independent variables on a single dependent variable. The goal is to estimate the dependent variable based on known values of the independent variables. The equation is then transformed into logarithmic form to determine the percentage change in the independent variables on the dependent variable.

$$Log\ Y = \alpha + log\beta_1 X_1 + log\beta_2 X_2 + log\beta_3 X_3 + e$$

Note:

Y = Gross Regional Domestic Product (GRDP) of Malang Regency
X_1 = Total output of the agricultural sub-sector
X_2 = Total output of the livestock sub-sector
X_3 = Total output of the fisheries subsector
α = Constant
b = Regression Coefficient
e = Error

Hypothesis Testing

The steps to test the hypothesis using multiple linear regression are as follows:

1. Model Feasibility Test (F-Test)

The F-test is used to simultaneously test the significance of the influence of independent variables (X) on the dependent variable (Y). The steps in the simultaneous test (F-test) are:

a. Comparing the calculated F value with the F-table value.
   1) If the calculated F-value is greater than the F-table value, then H_0 is rejected, and H_1 is rejected.
   2) If the calculated F-value is less than the F-table value, then H_0 is rejected, and H_1 is accepted.

b. Determining the Significance Level
   1) If the significance probability value is greater than 0.05, then H_0 is accepted, and H_1 is rejected.
   2) If the significance probability value is less than 0.05, then H_0 is rejected, and H_1 is accepted.

2. Partial Test (t-Test)

The partial test is used to determine whether the independent variable (X) has a single effect on the dependent variable (Y). This test is performed by comparing the calculated t and t values, measured using the rule of thumb. The decision in this test is as follows: If the calculated t value is greater than the t value, the hypothesis is accepted; if the calculated t value is less than the t value, the hypothesis is rejected.

RESULTS AND DISCUSSION

Overview of Malang Regency

Malang Regency, located in East Java Province, is the second-largest regency in East Java after Banyuwangi Regency. Geographically, Malang Regency borders six regencies and the Indian Ocean. To the northeast, it borders Pasuruan and Probolinggo Regencies. To the east, it borders Lumajang Regency. To the south, it borders the Indian Ocean. To the west, it borders Blitar Regency. To the north-west, it borders Kediri and Mojokerto Regencies. Malang Regency covers an area of approximately 3,534.86 km2 and consists of 33 sub-districts, 12 urban villages, and 378 villages. Malang Regency's climate shows the highest humidity value, at 90.74%, in December, while the lowest humidity value is in May, averaging 87.47%.

Malang Regency's population growth averages 0.73% per year. The proportion of the population consists of 1,269,613 men (50.25%) and 1,257,474 women (49.75%) with an average density of 780 people/km². The topographic conditions of Malang Regency are a highland area surrounded by several mountains and lowlands or valley areas at an altitude of 250-500 meters above sea level (asl), located in the central part of Malang Regency. The highland area is a limestone hilly area (Kendeng Mountains) in the south at an altitude of 0-650 meters asl, the Tengger-Semeru slope area in the east stretching from north to south at an altitude of 500-3,600 meters asl and the Kawi-Arjuno slope area in the west at an altitude of 500-3,300 meters asl. Malang Regency is one of the regencies that has a large agricultural sector, including in the sub-sectors of food crops, livestock and fisheries, which can increase the amount of GRDP each year.

Table 1. Development of GRDP at Constant Prices in the Food Crops, Livestock, and Fisheries Sub-Sectors in Malang Regency, 2016-2022 (Rp. Million)

Year	GRDP (Y)	Food Crops (X1)	Livestock (X2)	Fisheries (X3)
2016	58,247,344.86	2,006,747.0	2,737,844.5	1,053,985.9
2017	61,408,929.19	1,961,485.9	2,866,826.1	1,114,927.3
2018	64,819,044.55	1,794,394.6	2,889,811.5	1,144,248.4
2019	68,379,670.03	1,770,930.7	2,953,005.5	1,127,227.1
2020	66,545,472.94	1,764,621.5	2,951,639.9	1,039,431.3
2021	68,619,103.48	1,763,487.4	2,853,030.2	1,008,694.3
2022	72,136,463.21	1,711,735.9	2,948,709.0	1,019,171.4

Source: Badan Pusat Statistik Malang Regency (2024)

Based on Table 1, Malang Regency's Gross Regional Domestic Product (GRDP) has tended to increase from 2016 to 2022. It consistently contributed Rp 72,136,463.21 to the GRDP in 2022. The data obtained shows that the GRDP in Malang Regency demonstrates excellent economic performance, as evidenced by the continuous increase in Gross Regional Domestic Product (GRDP). The food crops, livestock, and fisheries subsectors are among the agricultural subsectors that contribute to the Gross Regional Domestic Product (GRDP) in Malang Regency. Based on the data obtained, these three subsectors are worthy of development to further increase the Gross Regional Domestic Product (GRDP).

Multiple Linear Regression Analysis

This study uses multiple regression analysis to test the effect of two or more independent variables on a single dependent variable, with the aim of estimating the dependent variable based on known values. The results of the linear regression calculation are as follows:

Table 2. Multiple Linear Regression Analysis

Model	Unstandardized Coefficients	
	B	Std. Error
Constants	-37.364	7.377
Food Crops	4,377	0.911
Livestock	1,939	0.466
Fisheries	0.737	0.512

Source: Authors' calculations

Table 2 explains the multiple linear regression equation used in this study. The regression equation formula is as follows:

$$logY = -37.364 + 4.377logX_1 + 1.939logX_2 + 0.737logX_3 + e$$

The regression equation above can be explained as follows:

a. The constant value of -37.364 indicates that if the food crops, livestock, and fisheries variables are equal to zero, then the GRDP is -37.364, assuming all other things remain constant.
b. The coefficient value for the food crops variable is positive at 4.377. This indicates that, assuming other independent variables are ignored, a 1% increase in the food crops variable can result in a 4.377% decrease in GRDP.
c. The coefficient value for the livestock variable is positive at 1.939. This indicates that, assuming other independent variables are ignored, a 1% increase in the livestock variable can result in a 1.939% increase in GRDP.
d. The coefficient value for the fisheries variable is positive at 0.737. This indicates that, assuming other independent variables are ignored, a 1% increase in the fisheries variable can result in a 0.737% increase in GRDP.

Hypothesis Testing

1. Simultaneous Test (F-Test)

This test is used to determine whether all independent variables in the regression model have a joint effect on the dependent variable. The following calculation results are obtained:

Table 3. Simultaneous Test

Variable	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.044	3	0.015	15.336	.025
Residual	0.003	3	0.001		
Total	0.047	6			

Source: Authors' calculations

Hypothesis:

$H_0 : \beta_i = 0$

H_1: There is at least one $\beta_i \neq 0$

Significance Level:

$\alpha = 0{,}05$

Rejection Criteria:

$F_{hitung} > F_{tabel}$ or $Sig < \alpha$ (0.05), then reject H_0

$F_{hitung} < F_{tabel}$ or $Sig > \alpha$ (0.05), then fail to reject H_0

Based on the regression results above, the significance value for the joint influence of the food crops, livestock, and fisheries sub-sectors on GRDP is 0.025. If the value of F_{count} is 15.336 and the value of F_{table} is 9.280, then F_{count} (15.336) > F_{table} (9.280) and the value of *Sig* (0.025) <α (0.05), then reject H_0. So it can be concluded that at least one independent variable (food crops, livestock and fisheries) has a positive and significant effect on the dependent variable (GRDP).

1. Partial Test (T-Test)

The partial test is used to determine whether the independent variable (X) has a partial effect on the dependent variable (Y). This test is performed by comparing the values of t_{count} and $t_{table,}$ which are measured based on the rule of thumb. The following are the calculation results obtained:

Table 4. Partial Test

Variable	Std. Error	T	Sig.
Food Crops	0.911	4.806	0.017
Livestock	0.466	4.159	0.025
Fisheries	0.512	1.441	0.245

Source: Authors' calculations

Based on the output results, it can be concluded that for the influence of the Food Crops variable (X_1) on GRDP (Y), the analysis results show a value of t_{count}(4.806) > t_{table}(3.182) or the value of *Sig* (0.017) < α (0.05), then reject H_0. So, it can be concluded that the results of the study state that the food crops sub-sector has a significant influence on Gross Regional Domestic Product in Malang Regency.

Then the influence of the livestock variable (X_2) on GRDP (Y) shows the value of t_{count}(4.159) > t_{table}(3.182) or the value of *Sig* (0.025) < α (0.05), then reject H_0. So it can be concluded that the results of the study state that the livestock sub-sector has a significant influence on Gross Regional Domestic Product in Malang Regency. The influence of the Fisheries variable (X_3) on GRDP (Y) gets a value of t_{count}(1.441) > t_{table}(3.182) or the value of *Sig* (0.245) < α 0.05, then reject H_0. This means that partially, there is no significant influence of the fisheries variable and GRDP. Therefore, the fisheries variable in this study does not have a significant influence on Gross Regional Domestic Product.

The coefficient of determination (R-Square) measures the percentage influence of an independent variable on a dependent variable in a regression model. The results of the coefficient of determination test are as follows:

Table 5. Partial Test

Model	R	R Square	Adjusted R-Square	Std.Error Of the Estimate	Durbin Watson
1	0.969	0.939	0.878	0.03096	1.360

The Adjusted R-Square value of 0.878 indicates that food crops (X_1), livestock (X_2), and fisheries (X_3) contribute 87.8% to the GRDP (Y) variable, while the remaining 12.2% is influenced by other variables not examined in the study. In other words, 87.8% of the variation in the GRDP (Y) variable can be explained by variations in food crops (X_1), livestock (X_2), and fisheries (X_3).

The results of research and testing indicate that food crops influence GRDP. The food crops sub-sector plays a major role in the national and regional economy, including employment, the provision of food and industrial raw materials, and as a primary source of livelihood for the majority of the population, particularly in rural areas. Therefore, together with the industrial sector, the development of the food crops sub-sector plays a key role in economic development in Malang Regency. Malang Regency is the second-largest regency in East Java after Banyuwangi Regency. The agricultural sector plays a crucial role in the economy of Malang Regency. The following is data on food crop production in Malang Regency from 2016 to 2020. The following is data on food crop production in Malang Regency.

Table 6. Food Crop Production (tons) 2016-2020

Types of food crops	2016	2017	2018	2019	2020
Rice	478.930	505.138	498.157	498.586	481.001
- Wetland rice	452.608	463.233	486.261	445.127	450.601
- Upland rice	25.589	41.905	9.089	41.655	29.400
Corn	247.150	295.340	268.295	341.847	327.816
Cassava	248.529	250.453	206.552	176.226	124.985
Sweet potatoes	11.684	7.639	17.882	8.733	8015
Peanuts	1.746	2.013	818	812	871
Soybeans	359	964	19.767	6.377	1.130

Source: Dinas Tanaman Pangan Holtikultura dan Perkebunan Kabupaten Malang (2017)

The table shows that food crop production in Malang Regency tends to increase. This can be seen from the agricultural sector's significant contribution to Gross Regional Domestic Product (GRDP), employment generation, income generation for the majority of the population, poverty alleviation, food security, and a conducive environment for the development of other sectors. One subsector within the agricultural sector is the food crops subsector.

The food crops subsector is linked to the GRDP figures; it also relates to and contributes to other economic sectors. One reason the food crops subsector is linked to other sectors is that most of the primary raw materials for the food industry come from food crops. Rice is a food crop needed by the food industry as a primary ingredient in rice production. Another food crop is cassava, which can be processed into tapioca flour. Soybeans are also used in the beverage industry as a primary ingredient in the production of soy milk. Therefore, if food crops play a significant role in other economic sectors, their contribution to GRDP revenue will increase through the sale of these crops. Food crops can also create new jobs and create added value due to their contribution to GRDP.

The research results show that livestock has a significant influence on GRDP. The livestock sector is quite important in meeting the community's food needs. Livestock development is an integral part of agricultural development in Malang Regency and plays a strategic role in improving health and intelligence through the provision of food from livestock as a source of animal protein. Furthermore, livestock plays a role in increasing community income and creating jobs. Therefore, livestock development is a source of economic growth, contributing to reducing poverty and unemployment in

Malang Regency. The following are the results of livestock production development in Malang Regency.

Table 7. Development of Livestock Production by Product Type in Malang Regency (tons) 2016-2020

Product Type	2016	2017	2018	2019	2020
Meat	39,949.12	41,066.70	42,962.81	45,003.91	45,432.04
Eggs	43,452.20	44,730.79	46,069.68	47,485.98	48,023.80
Milk	137,324.46	142,966.10	148,891.20	155,083.50	161,544.20

Source: Dinas Tanaman Pangan Holtikultura dan Perkebunan Kabupaten Malang (2017)

Based on the table data, livestock production tends to increase. The livestock sector in Malang Regency is a significant agricultural subsector. The growth in livestock production demonstrates the positive contribution of livestock farming to the economy in Malang Regency. Therefore, developing livestock farming in Malang Regency could be a sector that can contribute to the GRDP (Regional Gross Domestic Product). Furthermore, smallholder livestock farmers' purchasing power for high-quality commercial feed is very low due to its relatively high price, as raw materials are imported. Therefore, alternatives are needed, utilising raw materials from four local resources. One alternative for livestock feed is utilising and developing agricultural and plantation waste, which has nutritional content equivalent to commercial feed. Organic rice has good market prospects because organic rice farming has the potential for continuous improvement and allows for higher profits compared to non-organic farming. Organic rice cultivation can be carried out by utilising the surrounding environment, resulting in relatively lower input costs. Furthermore, organic rice is more expensive than non-organic rice.

The results of the study indicate that fisheries do not affect GRDP. Fisheries have played a crucial role in human civilisation from prehistoric times to the present day. According to Law No. 31 of 2004, fisheries are all activities related to the management and utilisation of fish resources and their environment, from pre-production, production, processing, to marketing, carried out within a fisheries business system. The fish resources referred to here encompass the potential of all fish species, thus indirectly influencing the growth of GRDP.

Malang Regency is a regency in East Java Province. Malang Regency boasts extensive marine potential in the Southern Ocean of Malang Regency, East Java, particularly in marine fisheries. The potential for marine fisheries in Malang Regency is highly promising for increasing regional revenue (Bisnis Daerah, 2014). This marine fisheries potential in Malang Regency is found in six sub-districts: Sumbermanjing Wetan, Donomulyo, Tirtoyudo, Bantur, Ampelgading, and Gedangan (Malang Regency Fisheries Office, 2017). Capture fish production in Malang Regency reached 11,077.67 tons in 2016, 11,727.67 tons in 2017, 12,314.00 tons in 2018, 13,833.50 tons in 2019, 16,526.40 tons in 2020, 19,426.73 tons in 2021, and 14,171.40 tons in 2022.

The agricultural sector also includes several types of fisheries, including marine capture fisheries, public water capture fisheries, and aquaculture, which includes ponds, floating nets, rice-fish, marine cages, and fish cages. In this study, the impact of fisheries on the fisheries sector was not significant due to the limited number of fishing gear, which makes it difficult for fishermen in coastal areas to manage their capture fisheries. It is difficult to obtain fish seeds, which can trigger the extinction of fish; frequent bad weather in coastal areas results in the death of many fish seeds. The selling price of fish is unstable, while the price of feed continues to rise, resulting in a misalignment in helping the economy of fishermen in coastal areas.

CONCLUSIONS

Based on the research results, it can be concluded that the food crops, livestock, and fisheries sub-sectors simultaneously have a significant influence on Malang Regency's GRDP. Partially, the food crops and livestock sub-sectors have a positive and significant influence on GRDP, while the fisheries sub-sector has a positive but insignificant influence. The coefficient of determination of 0.878 indicates that 87.8% of the variation in Malang Regency's GRDP can be explained by these three sub-sectors, while the remainder is influenced by factors outside the research model. This indicates that the agricultural sector, particularly the food crops and livestock sub-sectors, plays a significant role in supporting regional economic growth.

Based on the research results, the Malang Regency government is expected to continue optimising the development of the food crops, livestock, and fisheries sub-sectors through increased productivity, technological support, and policies that encourage strengthening the agricultural sector. Furthermore, greater attention is needed to develop the fisheries sub-sector to increase its contribution to GRDP. Future research is recommended to include other variables that also have the potential to influence GRDP to provide more comprehensive results.

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