Factors affecting amplang production in Samarinda City, East Kalimantan Province

Yanisa Augusta* | Gusti Haqiqiansyah | Wahyu Fahrizal

Department of Social Economic, Faculty of Fisheries and Marine Science, Mulawarman University
Jl. Gunung Tabur No. 1. Kampus Gn. Kelua Samarinda 76123
**E-mail: yanisaaugusta.ya@gmail.com*

ARTICLE INFO

Research Article

Article history:
Received June 27, 2023
Received in revised form January 18, 2024
Accepted July 25, 2024

DOI:

Keywords: *cracker, fish product, snack, local*

ABSTRACT

This study uses several factors of production, namely capital, labor (HOK), and raw materials. The aims of this study were: (1) to determine the influence of production factors such as capital, labor (HOK) and raw materials; and (2) to find out what problems or obstacles are experienced during running a business. This research was conducted in Samarinda City, East Kalimantan Province. Primary data is obtained by observing and recording (observation) directly at the research location/object to be studied, as well as using direct interview techniques with respondents, namely business owners/employees. The sampling method for this research was carried out using a purposive sampling method, the samples selected based on these criteria were 30 businessmen processing amplangs/respondents. Methods of data analysis in this study used: (1) multiple linear regression analysis; (2) statistical test; (3) classic assumption test; and (4) descriptive analysis using computerized calculation tools such as Microsoft Excel Software and SPSS (Statistical Product And Service Solutions). The results showed that: Simultaneously (together), the capital input variable (X1), labor input (HOK) (X2) and raw material input (X3) had a significant effect on the amplang production variable (Yi), while partially, only labor input (HOK) (X2) and raw material input (X3) had a significant effect on the amplang production variable (Yi). The problems experienced by amplang processors were a decline in sales during the Covid-19 pandemic and a lack of availability of fish raw materials.

INTRODUCTION

Samarinda is the capital city of East Kalimantan Province. Geographically, Samarinda is located between 0021'81"-10/09'16" South Latitude and 116015'16"-117024'16" East Longitude, and it is crossed by the equator. The area of Samarinda City is 718.00 km² (BPS Kota Samarinda, 2021). As a city of services and trade, Samarinda has experienced rapid industrial growth, particularly in the Small and Medium Industries (IKM) sector. In addition to having a positive impact on investment, IKM also significantly contributes to employment. Samarinda has developed fishery production to ensure nutritional and food security for its residents, as well as to diversify fishery products. The variety of fishery products includes milkfish, jackfruit seed fish, flatfish, and others. These products are valuable, competitive, and can improve the income and welfare of the fishing community. Given this potential, milkfish, jackfruit seed fish, flatfish, and other fish have great potential for development. Utilizing these fish can be enhanced through processing that adds value through more modern processed products. One such processed product using animal-based raw materials is amplang (Balai Pelatihan Dan Penyuluhan Perikanan, 2018).

According to Haqiqiansyah (2020), in East Kalimantan, amplang is a popular fishery product among the community. Amplang is a traditional snack in the form of crackers made from flatfish and is often brought as a souvenir by people outside Kalimantan. Maliha (2018) states that given the rapid development of the business world, companies are always striving to improve their capabilities to achieve their goals. Every company aims to make a profit, which can be used to develop the company. This is determined by production factors such as capital, labor, raw materials, and others. Efficient use of these production factors can determine the success of a company. Pradana (2013) asserts that the goal of entrepreneurs is to maximize profits. Maximizing profits can be achieved not only by focusing on raw materials but also by considering labor. Skilled and educated labor will always maximize production results offered to consumers. Creative entrepreneurs and workers can also attract consumers through packaging and the appearance of the marketed products. Additionally, the amount of capital also affects the output ready for the market.

Based on the background above, this research examines several production factors used in amplang production, namely capital, labor (HOK), and raw materials. These factors are crucial in this business because capital is needed to meet consumer demand, skilled labor is required in the field, and high-quality raw materials are essential. Therefore, the author is interested in conducting research titled "Factors Influencing Amplang Production in Samarinda, East Kalimantan Province."

METHODOLOGY

This research was conducted at several locations of amplang processing business owners in Samarinda City, East Kalimantan Province. The series of research activities were carried out over an effective period of approximately 8 months, from October 2020 to May 2023. Based on the data sources obtained, this research used both primary and secondary data. Primary data was obtained through direct observation and recording (observations) at the research location/object to be studied, as well as using direct interview techniques with respondents, including business owners/employees. The primary data required includes respondent identities, descriptions of the amplang processing business in Samarinda, descriptions of the amplang processing stages, capital used in the amplang business (Rp/production), labor (HOK), raw materials (Kg/production), and problems/challenges faced. Secondary data in this study were obtained from various relevant literature such as literature studies, officially published materials, books, theses, scientific journals, previous research, and other reports related to this research, including reports from relevant agencies or institutions such as data from the Central Bureau of Statistics of Samarinda and others.

Sampling Method

The sampling method in this research was conducted using purposive sampling. Purposive sampling is a technique for determining samples with certain considerations or specific selections (Siyoto and Sodik, 2015). The sample in this study consisted of amplang business owners or workers from the amplang business in the areas of finance, management, or production, using direct interview techniques with questionnaires. The number of samples selected based on the criteria was 30 amplang processing entrepreneurs/respondents. These 30 respondents were spread across several sub-districts in Samarinda City.

Data Analysis Method

Data processing in this research used computational tools or instruments, specifically Microsoft Excel and SPSS (Statistical Product and Service Solutions). Once the values from the data processing were obtained, the final stage was to interpret the results of the data processing. The following formulas were used for analysis:

1. Multiple Linear Regression

In this study, the multiple linear regression formula is as follows (Sugiyono, 2012):

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + ei$$

Where:

Y	= Amplang production (Kg)
a	= Constant
$\beta_{(1,2,3)}$	= Regression coefficients
X_1	= Capital (Rp)
X_2	= Labor (HOK)
X_3	= Raw Material (Kg)
ei	= Standard Error

To calculate the coefficients a and bi, use the following formulas:

$$bi = \frac{\Sigma xy}{\Sigma x^2}$$
$$a = \bar{Y} - b\,\bar{X}$$

2. Statistical Testing

Statistical testing or hypothesis testing is used to determine if there is a significant effect of the independent variables on the dependent variable using F-test, T-test, correlation coefficients, and the coefficient of determination.

a. Simultaneous Significance Test (F-test)

According to Sugiyono (2014), the F-test formula is:

$$F = \frac{R^2/k}{(1 - R^2)/(n - k - 1)}$$

Where:

R^2	= Coefficient of Determination
k	= Number of independent variables
n	= Number of data points

Compare the computed F-value with the F table value at a 5% significance level (0.05)

b. Partial Significance Test (T-test)

According to Sugiyono (2014), the T-test formula is:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1 - r^2}}$$

Where:

t	= t-distribution
r	= Partial correlation coefficient
r^2	= Coefficient of determination

n = Number of data points

c. Partial Correlation Coefficient (r)

This test is used to determine the correlation between two variables while controlling for other variables. The partial correlation coefficient formula is:

$$r_{xy} = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{(n\sum x2 - (\sum x)2)\,(n\sum y2 - (\sum y)2)}}$$

Where:

r_{yxi} = Correlation coefficient between Y and X
x = Independent variable
y = Dependent variable
n = Number of data points

d. Simultaneous Correlation Coefficient (R)

The simultaneous correlation test is used to determine the extent of the relationship between two or more independent variables simultaneously (together). Simultaneous correlation has coefficients that range between -1, 0, and +1. A correlation of -1 represents a perfect negative correlation, meaning a relationship between two or more variables in the opposite direction, while +1 represents a perfect positive correlation, indicating a direct relationship between two or more variables. A correlation of 0 indicates no relationship between the tested variables, suggesting no correlation at all.

e. Coefficient of Determination (Adjusted R^2)

The coefficient of determination (R^2) is used to assess how well the regression model or regression line fits the actual data (goodness of fit), by examining the adjusted coefficient of determination (Adjusted R^2). Essentially, the coefficient of determination (R^2) measures the extent to which the model explains the dependent variables (Ghozali, 2016).

RESULT AND DISCUSSION

Overview of the Amplang Processing Business in Samarinda City

Samarinda City, as a service and trade city, has experienced rapid industrial growth, particularly in the Small and Medium Enterprises (SMEs) sector. One of the SMEs that has grown significantly in Samarinda City is the amplang food industry. Amplang is a snack made from fish, shaped into round pieces and colored white to brownish. It is typically made from a mixture of fish and flour, then fried until crispy. It has a savory taste and a crunchy texture. Its unique shape makes it a popular souvenir during vacations in Samarinda City. Samarinda has SMEs established by local people, including those involved in food sales. The food types in Samarinda are diverse, with amplang being one of the products. In Samarinda City, there are outlets selling various types of amplang, such as amplang kuku macan, amplang with seasoning, and others. The most prominent outlets for amplang souvenirs in Samarinda City are located along Jalan Slamet Riyadi. The popularity of amplang among the public has led to a rapid increase in amplang production in Samarinda, which is attributed to the use of production factors such as capital, labor (HOK), and raw materials. The use of raw materials is related to the amplang production process.

Factors Affecting Amplang Production

1. Capital

The capital used includes fixed costs and variable costs during one production cycle. In this study, fixed costs consist of depreciation of equipment used for amplang production. The equipment used for amplang production includes production warehouses, sales warehouses, stoves, gas cylinders, freezers, blenders, fish grinders, scoops, sieves, frying pans, mixers, hand sealers, knives, and containers. Variable costs for amplang production include tapioca flour, salt, garlic, cooking oil, flavor enhancers, sugar, baking soda, chicken eggs, LPG gas, water, electricity, equipment/machine maintenance costs, employee wages, plastic, and fish.

2. Labor (HOK)

Labor, as referred to in this variable input, is the number of workers measured using Workdays (HOK). Labor (HOK) consists of workers directly involved in the amplang production process. Working hours for each production cycle vary, with an average work duration of 7 hours per production and 1 hour of rest. This is in line with Soekartiwi's (1986) statement that work units in hours can be converted to workdays as long as there is a benchmark for working hours per day. For example, one workday is equivalent to 7 working hours. The payment system for labor in the amplang processing business is on a wage basis, paid for each production cycle.

3. Raw Materials

Raw materials, in this variable input, refer to the fish used in the amplang production process. The types of fish used by amplang producers in Samarinda City vary, including milkfish, mackerel, moonfish, flatfish, and jackfruit seeds. The amount of fish used to make amplang varies among different amplang businesses, ranging from 1 kg to 150 kg of raw fish per production cycle.

Interpretation of Multiple Linear Regression Model

The factors influencing amplang production in Samarinda City based on the multiple linear regression model and its interpretation are as follows:

$$\hat{Y}i = -9{,}392 + 3{,}395X_1 + 1{,}426X_2 + 1{,}879X_3$$

Table 1. Multiple Linear Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9,392	5,941		-1,581	0,126
	Capital (X1)	3,395E-7	0,000	0,028	0,509	0,615
	Labor (HOK) (X2)	1,426	0,287	0,097	4,974	0,000
	Fish Raw Material (X3)	1,879	0,112	0,898	16,767	0,000

The meaning of the above multiple linear regression model equation indicates that:

a. Constant Value

The value of -9.392 represents the intercept or constant of the multiple linear regression model. This value implies that if the input variables capital (X1), labor (HOK) (X2), and raw materials (X3) do not

change (remain constant) or are zero, then the production of amplang would decrease by -9.392. Thus, it can be concluded that if all input variables are zero, production will decrease.

b. Capital

The value of 3.395 is the regression coefficient for the capital input variable (X1) with respect to amplang production (Yi). This value indicates the effect of the capital input variable (X1) on amplang production (Yi). It suggests that if the capital input increases by 1%, amplang production will increase by 3.395%, assuming that the labor (HOK) (X2) and raw material (X3) inputs remain constant or ceteris paribus.

c. Labor (HOK)

The value of 1.426 is the regression coefficient for the labor input variable (HOK) (X2) with respect to amplang production (Yi). This value indicates the effect of the labor input variable (HOK) (X2) on amplang production (Yi). It suggests that if the labor input (HOK) (X2) increases by 1% or one unit, amplang production will increase by 1.426%, assuming that the capital (X1) and raw material (X3) inputs remain constant.

d. Raw Materials

The value of 1.879 is the regression coefficient for the raw material input variable (X3) with respect to amplang production (Yi). This value indicates the effect of the raw material input variable (X3) on amplang production (Yi). It suggests that if the raw material input (X3) increases by 1% or one unit, amplang production will increase by 1.879%, assuming that the capital (X1) and labor (HOK) (X2) inputs remain constant.

1) F-Test (Simultaneous Test)

The simultaneous test uses the Analysis of Variance (ANOVA) table, as shown below:

Table 2. Results of the F-Test (Simultaneous Test) Using ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3143291,914	3	1047763,971	1948,522	0,000[b]
	Residual	13980,786	26	537,723		
	Total	3157272,700	29			

Based on the ANOVA table, the calculated F-value is 1948.522, and the F-table value is 2.98 (1948.522 > 2.98), with a significance level of 0.000 < α0.05. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (Ha) is accepted. This indicates that the input variables capital (X1), labor (HOK) (X2), and raw materials (X3) have a simultaneous effect on amplang production (Yi) at the 5% significance level. It can be concluded that capital (X1), labor (HOK) (X2), and raw materials (X3) significantly affect amplang production (Yi) in Samarinda City.

2) T-Test (Partial Test)

The results of the partial test can be seen in the following table:

Table 3. Results of the T-Test (Partial Test)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9,392	5,941		-1,581	0,126
	Capital (X1)	3,395E-7	0,000	0,028	0,509	0,615
	Labor (HOK) (X2)	1,426	0,287	0,097	4,974	0,000
	Fish Raw Materials (X3)	1,879	0,112	0,898	16,767	0,000

Based on the results of the T-Test (Partial Test):

a. The value for the capital input variable (X1) has a significance level of t = 0.615 > α0.05. Therefore, the alternative hypothesis (Ha) is rejected, and the null hypothesis (H0) is accepted, indicating that the capital input variable (X1) does not have a significant effect on amplang production (Yi) at α 5%, assuming that the labor (HOK) (X2) and raw material (X3) inputs are constant.

b. The value for the labor input variable (HOK) (X2) has a significance level of t = 0.000 < α0.05. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (Ha) is accepted, indicating that the labor input variable (HOK) (X2) has a significant effect on amplang production (Yi) at α 5%, assuming that the capital (X1) and raw material (X3) inputs are constant.

c. The value for the raw material input variable (X3) has a significance level of t = 0.000 < α0.05. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (Ha) is accepted, indicating that the raw material input variable (X3) has a significant effect on amplang production (Yi) at α 5%, assuming that the capital (X1) and labor (HOK) (X2) inputs are constant.

3) Coefficient of Determination (R^2)

The calculation results for the Coefficient of Determination (R^2) are shown in the table below:

Table 4. Results of the Coefficient of Determination (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,998[a]	0,996	0,995	23,189

This test is used to determine the goodness of fit of the regression model by looking at the Coefficient of Determination (R^2). Based on the calculation results, the R^2 value is 0.996. This value indicates that the ability of the input variables capital (X1), labor (HOK) (X2), and raw materials (X3) to explain the variation or fluctuation in amplang production (Yi) is 99.6%, with the remaining 0.4% explained by other variables not included in the model, represented by the residual value (ei). An R^2 value of 0.996, which is close to 1, signifies a very strong relationship and indicates that the influence of the input variables capital (X1), labor (HOK) (X2), and raw materials (X3) on amplang production (Yi) is very strong.

Problems in the Production Process

Every business faces challenges, including the amplang production business. Data for this research were collected by distributing questionnaires directly to respondents encountered. The researcher met with respondents and provided a set of questions for them, targeting those involved in amplang production in Samarinda City. Based on the research, several problems in amplang production were identified:

1. Decline in Sales During the COVID-19 Pandemic

Coronavirus Disease (COVID-19) is an infectious disease caused by a newly discovered type of coronavirus. The virus and the disease it causes were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 has now become a pandemic affecting many countries worldwide (WHO, 2020).

The COVID-19 pandemic impacted various aspects of the economy in Indonesia, including the amplang production business in Samarinda City. COVID-19 caused a decrease in amplang sales because, before the pandemic, there were many tourists visiting Samarinda City, which kept amplang sales stable or even increased during certain months. However, after the pandemic began, sales declined due to lockdowns and Community Activity Restrictions (PPKM), which prevented tourists from visiting Samarinda City. This affected the income of the amplang production business. Public income decreased due to the COVID-19 outbreak, leading to a drop in economic activities and a reduction in purchasing power. A potential solution is to reduce production to match the decreased demand.

2. Limited Availability of Fish Raw Materials

The availability of fish raw materials is a crucial factor in producing amplang. In Samarinda City, amplang production often faces obstacles and shortages of fish raw materials. Fish raw materials are sourced from collectors who buy fish from fishermen. Bad weather, such as strong winds and unpredictable marine climate, sometimes prevents fishermen from fishing, resulting in a shortage of fish raw materials and hindering amplang production. A possible solution is to halt production to maintain the quality and taste of the amplang.

CONCLUSION

1. Simultaneously, the input variables of capital (X1), labor (HOK) (X2), and raw materials (X3) significantly affect the amplang production variable (Yi). However, partially, only labor input (HOK) (X2) and raw materials (X3) have a significant impact on the amplang production variable (Yi).
2. The main problems faced by amplang producers are the decline in sales during the COVID-19 pandemic and the limited availability of fish raw materials.

REFERENCES

Badan Pusat Statistik Kota Samarinda. 2022. *Kota Samarinda Dalam Angka 2022*. Samarinda. https://samarindakota.bps.go.id/publication/download.html (Diakses pada tanggal 27 Januari 2022)

Balai Pelatihan Dan Penyuluhan Perikanan Bitung. 2018. *"Ikan Bandeng" Membuat Pengolah Samarinda Takjub*. https://kkp.go.id/brsdm/bp3bitung/artikel/5939-ikan-bandeng-membuat-pengolah-samarinda-takjub. (Diakses pada tanggal 20 November 2020).

Ghozali, Imam. 2016. *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23*. Badan Penerbit Universitas Diponegoro. Semarang.

Haqiqiansyah, G., & Saleha, Q. (2020). Peran Media Sosial Sebagai Sarana Promosi Pada Pemasaran Hasil Pengolahan Amplang Di Kecamatan Sanga Sanga Kabupaten Kutai Kartanegara. Jurnal Pembangunan Perikanan dan Agribisnis, 7(1), 1-11.

Maliha, A. (2018). Pengaruh Modal, Tenaga Kerja, Dan Bahan Baku Terhadap Tingkat Pendapatan Industri Kue Dalam Perspektif Ekonomi Islam (Studi Kasus Di Home Industri Mitra Cake Legundi Sukarame Bandar Lampung) (Doctoral dissertation, Uin Raden Intan Lampung).

Pradana, A. D. (2013). Analisis Faktor-faktor yang Mempengaruhi Efisiensi Industri Rumah Tangga Keripik Tempe di Kabupaten Blora. Economics Development Analysis Journal, 2(2).

Siyoto, S. dan M.A. Sodik. 2015. Dasar Metodologi Penelitian. Literasi Media Publishing. Yogyakarta. 130 hal.

Soekartiwi, 1986. Ilmu Usahatani dan Penelitian Untuk Pengembangan Petani Kecil. UI Press, Jakarta.

Sugiyono. 2012. *Metode Penelitian Pendekatan Kualitatif,Kuantitatif dan R&D*. Penerbit Alfabet. Bandung.

Sugiyono. 2014. *Metode Penelitian Pendidikan Pendekatan Kualitatif,Kuantitatif dan R&D*. Penerbit Alfabet. Bandung.

Sugiyono. 2017. *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.

Sugiyono. 2018. Metode Penelitian Kuantitatif Dan Kualitatif. CV. Alfabeta, Bandung

WHO (World Health Organization). 2020. Coronavirus. (diakses pada tanggal 13 Januari 2022). https://www.who.int/indonesia/news/novel-coronavirus/qa/qa-for-public