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Supply Channels for Purebred Chicken Eggs

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Abstract

This research aims to analyze the supply channels and selling prices for purebred chicken eggs from South Sulawesi entering the Wameo market in Baubau City, the transportation routes for purebred chicken eggs entering the Wameo market, and the margin between the selling price of intermediary traders and the buying price of Wameo market egg traders. The samples used in this research were 13 brokers of purebred chicken eggs who entered the Wameo market, and all the purebred chicken egg traders in the Wameo market were 40 people, which was carried out by census and analyzed descriptively. The results of the analysis show that 1) Producers supplying purebred chicken eggs entering the Wameo market consist of 4 regions in South Sulawesi, namely Sidrap, Soppeng, Bulukumba, and Pangkep. 2) The distribution route for suppliers of purebred chicken eggs from South Sulawesi entering the Wameo market only uses one seaport route, namely Bajoe – Baubau. 3) The marketing margin for purebred chicken eggs entering the Wameo market for intermediary traders is IDR 2,000 per shelf and for holding traders IDR 5,000 per shelf.

Keywords: Supplier channels, chicken eggs, Wameo

A. Introduction

As the population increases in urban areas and coastal areas, the community's needs and awareness regarding nutritional needs will also increase, this shows that the need for livestock products as a source of animal protein will also increase, including the need for purebred chicken eggs. The livestock sector in Southeast Sulawesi in the period 2015 - 2021 continues to experience increased efforts and the community is aware that human needs for animal protein are increasing along with the increase in population in Southeast Sulawesi (Sani, *et al.* 2021). The large population means that mathematically the demand for livestock products such as meat, eggs and milk will also increase. One of the livestock sub-sectors that plays a role in providing animal protein is the poultry sector (Lestari, *et al.* 2011).

The need for purebred chicken eggs on Buton Island and its surroundings still plays an important role in fulfilling the need for animal protein as a companion to fish side dishes. Apart from being used as a side dish, purebred chicken eggs are also used as ingredients for making cakes and other snacks which are practical and easy to obtain. Apart from that, in the western season the price of fish soars because it is difficult for fishermen to go to sea, so people turn to eggs as a substitute for side dishes. Therefore, people in the Buton Islands and surrounding areas cannot be separated from the need for eggs.

Laying chickens are adult female chickens that are kept specifically for their eggs (Ivory *et al.* 2019). Eggs as one of the poultry products have high nutritional value, including protein which

plays a very important role in the body because humans function as a component of materials that form new tissue in the body and control various systems in the body (Fausayana and Marzuki, 2017). Eggs are a storage place for nutrients such as water, protein, carbohydrates, fats, vitamins and minerals which are needed for the growth of the embryo until it hatches (Daud *et al.* 2018).

Data submitted by the Ministry of Agriculture through the Directorate General of Animal Husbandry and Animal Health (2022), states that the availability of purebred chicken eggs for consumption in the Eastern Region of Indonesia is safe and sufficient. Directorate General of Animal Husbandry and Animal Health (Ditjen PKH), one of the laying hen farms in South Sulawesi, namely PT. Cahaya Mario in Sidrap Regency with a total population of laying hens (*layer*) in South Sulawesi Province of as many as 12,982,642 chickens and the projected production of purebred chicken eggs in South Sulawesi Province in 2022 is 188,248 tons, so there is a surplus of 13,215 tons. This potential harvest is used as *Buffer Stock* for as much as 264 tons (2%) and is sold outside Sulawesi Island, such as to Kalimantan, NTT, Maluku and Papua as much as 733 tons (5.55%) per year.

The geographical condition of the Buton Islands, which only relies on sea transportation, means that the selling price of eggs reaching consumers is different. This is influenced by transportation costs and distribution travel times which are different between islands. Supplier of purebred chicken eggs based on Lestari's statement *et al.* (2011), the selling price of purebred chicken eggs compared to three suppliers of purebred chicken eggs in West Java, Bali and South Sulawesi, obtained the highest price from Bali and the cheapest from South Sulawesi. Apart from that, the transportation costs for goods or livestock products are more efficient for marketing in eastern Indonesia, originating from South Sulawesi, compared to these two suppliers. Based on this, the egg suppliers entering Baubau City, especially the Wameo market, are eggs from South Sulawesi.

Wameo traditional market is the market with the largest number of purebred chicken egg traders around the city of Baubau, in which there are some traders involved in the process of distributing eggs from producers to final consumers (buyers). Wameo Market is a traditional market on a city service scale and is a distributor for other areas such as Buton Regency, South Buton Regency, Central Buton Regency, North Buton Regency, Bombana Regency, and Wakatobi Regency. This market has a land area of 2,649 m² and accommodates around 830 traders consisting of vegetable traders, fruit traders, basic food traders, fish traders, egg traders and others and integrates directly with the fish port because its location is right on the edge of the sea (Baubau City Regional Regulation, 2014).

Based on the description above, the objectives of this research are; 1) analyze the supply channels and selling prices of purebred chicken eggs from South Sulawesi that enter the Wameo market in Baubau City, 2) analyze the transportation routes for purebred chicken eggs that enter the Wameo market, 3) analyze the margin between the selling price of intermediary traders and the buying price of egg traders Wameo market.

B. Methodology

1. Research design

The method used in this research is a survey and interview method using a structured questionnaire. The interviews conducted were aimed at intermediary traders and retailers in the Wameo market to obtain data. The types of data obtained are primary and secondary data, primary data is data directly obtained from intermediary traders and egg traders at the Wameo market, while secondary data is data obtained from supporting articles and other reading materials which contain supporting data in this research. Data sources were obtained from interviews and direct observation of egg traders at the Wameo market.

2. Research Population and Sample

Population can provide information or data that is useful for research. The sample is part of the population which is expected to represent the population in the research. According to Sugiyono (2017), the sample is part of the number and characteristics of the population. The sample was carried out because researchers had limitations in conducting research in terms of time, energy, funds and a very large population. So researchers must take truly representative samples (can represent). The sample population in this study were 14 companies supplying purebred chicken eggs from South Sulawesi who entered the Wameo market, 13 broiler egg brokers who entered the Wameo market, and 40 purebred chicken egg traders in the Wameo market. carried out by census.

3. Data analysis

The data analysis technique in this research is descriptive analysis, the data collected in the form of numbers comes from interview scripts, field notes and other supporting reading sources. Then the data obtained will be analyzed descriptively using the Sudiyono (2004) formula, namely:

$$M = Pr - Pf$$

Information :

M = Margin

Pr = Price of eggs at intermediary traders

Pf = Price of eggs at the holding trader

C. Findings and Discussion

Manufacturers supplying purebred chicken eggs

Chicken eggs are part of the daily necessities that are in great demand by island communities. The need for purebred chicken eggs in eastern Indonesia, including the Wameo market in Baubau City, is mostly supplied from South Sulawesi. The need for purebred chicken eggs entering the Wameo market in Baubau City in the last three months is presented in Table 1.

Table 1. Supplier of purebred chicken eggs from South Sulawesi who enters Wameo Market

Name of Company/Farm Supplier of Purebred Chicken Eggs	Quantity supplied and price difference in the last three months		
	Number of Racks in One Supply	Price/Shelf Min	Price/Shelf Max
Sidrap			
PT. Mario Light	20.000	46.000	54.000
CV. Egg yolk	8.000	46.000	54.000
CV. Dirga Mandiri	5.000	46.000	54.000
CV. Three Princesses	5.000	46.000	54.000
Soppeng			
CV. Lagocci	13.000	46.000	54.000
Coppo Benteng	11.000	46.000	54.000
Dilla Livestock	7.000	46.000	54.000
Bulukumba			
CV. Gargang	8.000	46.000	54.000
CV. Human light	6.000	46.000	54.000
CV. Nahra Eggs	8.000	46.000	54.000
CV. Divine Blessing	10.000	46.000	54.000
Cahaya Teti Aji	6.000	46.000	54.000
CV. Independent Light	5.000	46.000	54.000
CV. Pangkep Blessed Eggs	10.000	46.000	54.000
CV. Farm Friends	12.000	46.000	54.000

Source: processed primary data, 2024

From the research results, Table 1 shows the suppliers of purebred chicken eggs in the last three months, namely March-May, which entered the Wameo market consisting of four egg-producing regions in South Sulawesi Province, namely Sidrap, Soppeng, Bulukumba and Pangkep. The amount of demand or supply of eggs for each egg supplier producer entering the Wameo market is different, influenced by the quality of eggs that consumers are interested in, such as egg size and different egg colours. Quality is the characteristics of a product that determine the degree of perfection that will influence consumer acceptance. Abiyani (2022), stated that the poor quality of purebred chicken eggs and the large number of purebred chicken eggs that are rotten when they reach the hands of consumers cause consumers of purebred chicken eggs to be reluctant to consume purebred chicken eggs and choose other types of protein to meet their needs temporarily, causing a decline level of demand for purebred chicken eggs. The selling prices of producers supplying purebred chicken eggs marketed in several regions in South Sulawesi are relatively the same, with a minimum price of 46,000/shelf and a maximum price of 54,000/shelf. This shows that egg sales in South Sulawesi are uniformly controlled.

Distribution Route for Purebred Chicken Eggs Entering Baubau City

The distribution channels for suppliers of purebred chicken eggs from South Sulawesi who enter the Wameo market use ship transportation from Bajoe Port to Baubau City Port, which is presented in Table 2.

Table 2. Sea transportation route for egg suppliers from South Sulawesi entering the Wameo market

No	Ship Routes	Number of Ships (pieces/month)	Transport Schedule (track/month)	Ship Load (rack/fruit)	Quantity (shelves/month)
1	Bajoe - Baubau	14	2	20.000	560.000

Source: processed primary data, 2024

From the research results in Table 2, it is known that the sea transportation route for transporting purebred chicken eggs from South Sulawesi entering the Wameo market only uses one seaport route, namely Bajoe - Baubau. This is influenced by cheaper costs because they use special wooden ships to transport goods such as rice, vegetables, fruit, building materials, necessities, eggs and others. This route is easier because 14 ships are operating and each ship has a day's interval between departures, so goods don't have to queue for days at the port, and the location of the Baubau City demolition port is close to the Wameo market. The travel time from Bajoe Port to Baubau City Port takes around one day and one night (24 hours), this time is not much different from using an iron transport ship or ferry. Jinca, (2011), that the sea transportation mode is more efficient for transporting goods in large quantities, the transport speed and ton/mile transport costs are relatively low and are very profitable for long-distance goods transport in island areas.

Egg Supply Channel from Intermediary Traders to Container Traders at Wameo Market

The supply channels for purebred chicken eggs entering the Wameo market consist of two channels, namely direct and indirect. The shape of the egg supply channel entering the Wameo market is presented in Figure 2.

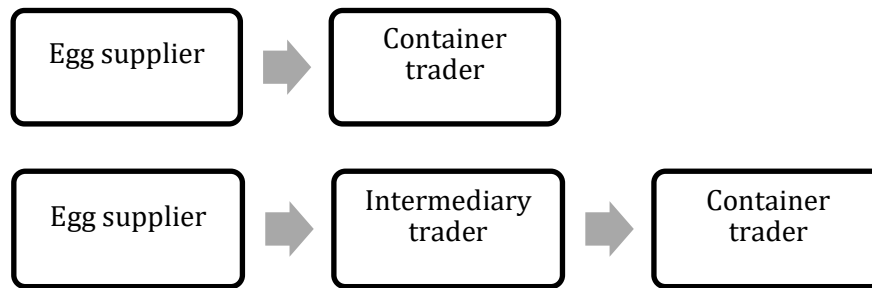


Figure 2. Egg supply channels at the Wameo market

The form of a direct supply channel, namely from supplier manufacturers - collecting traders in the Wameo market, provides selling prices to collecting traders as well as retailers that are more competitive to compete on selling prices with other traders. Meanwhile, indirect supply channels, namely supplier producers - intermediary traders - holding traders, provide selling prices to final consumers that are slightly higher or even the same, but with lower profits. Saptaryadi and Permatasari (2020), that egg marketing indirectly involves intermediary traders such as collectors and retailers, and the existence of intermediaries in marketing causes price differences at the level of traders and final consumers. Tobao *et al.* (2018), revealed differences in selling prices in each marketing channel due to different marketing areas so that traders buy at cheaper prices to get maximum profits (Wicaksono *et al.* 2020).

Purebred chicken eggs that have been supplied from producers in the South Sulawesi region and arrive at the Baubau port will be received by intermediary traders who are ready to wait for unloading, of course at different acceptance prices. The receiving prices and selling prices of intermediary traders to the Wameo market holding places are presented in Table 3.

Table 3. Average marketing price for purebred chicken eggs in March – May 2024 at the Wameo market

Types of Traders	Number of Traders	Average price of purebred chicken eggs		
		Purchase Price (Rp/shelf)	Selling Price (Rp/shelf)	Margin (Rp/shelf)
Intermediary trader	13	56.000	58.000	2.000
Container trader	40	58.000	61.000	3.000
Total				5.000

Source: processed primary data, 2024

From the research results in Table 3, it is known that there are 13 intermediary traders of purebred chicken eggs entering the Wameo market as suppliers, with a purchase price of IDR 56,000 per shelf for resale at IDR. 58,000 per shelf, so it can be seen that the difference or margin from the sales of eggs from intermediary traders at the Wameo market is Rp. 2,000 per shelf. 40 traders are holding purebred chicken eggs at the Wameo market, with a purchase price of IDR 58,000 per shelf for resale at an average price of IDR. 61,000 per shelf, with a margin of IDR 3,000 per shelf.

D. Conclusion

Based on the results and discussion, it can be concluded that the producers supplying purebred chicken eggs to the Wameo market consist of 4 regions in South Sulawesi, namely Sidrap, Soppeng, Bulukumba, Pangkep. The distribution channel for suppliers of purebred chicken eggs from South Sulawesi entering the Wameo market only uses one seaport route,

namely Bajoe - Baubau. The marketing margin for purebred chicken eggs entering the Wameo market for intermediary traders is IDR 2,000/shelf and for holding traders IDR 5,000/shelf.

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The Influence of Supply Chain Management Practices on MSME Performance Using Methods SEM (*Structural Equation Modeling*)

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Abstract

Gunungputri Village has great potential with a high number of entrepreneurs as a means of livelihood. Therefore, MSME players need to pay attention to the role of supply chain management practices which is very important to improve the performance of MSMEs. This research aims to analyze the partial and simultaneous influence of supply chain management practices on the performance of MSMEs. The data collection method uses a questionnaire. The sample and respondents were 145 processed food MSMEs. The analysis method uses *Structural Equation Modeling* (SEM), Smart PLS 4. The results of this study show that the partial influence of supply chain management practices on MSME performance is that only supplier relationship strategies, information sharing and warehouse management have a positive and significant effect on MSME performance. Meanwhile, consumer relationship strategies, information quality, delays and forecasting do not influence MSME performance. The research results show that supply chain management practices have a simultaneous influence on the performance of MSMEs and that the variables of supply chain management practices together have a simultaneous influence of 44.9 per cent and are in the medium category.

Keywords: Performance, MSMEs, supply chain, SEM

A. Introduction

Micro, Small and Medium Enterprises (MSMEs) in Indonesia have a vital role in creating employment opportunities, providing a source of income for poor groups, achieving equal distribution of income, reducing poverty levels, supporting economic development in rural areas, and encouraging the development of entrepreneurship, especially among women. Micro, Small and Medium Enterprises (MSMEs) in the food processing sector are a vital element in developing the food industry in Indonesia. Based on the Central Statistics Agency (2023), the majority of micro and small businesses focus on the food processing sector, contributing around 36.7% of the total number of micro and small businesses of around 4.34 million in Indonesia.

The role of MSMEs is very strategic, but developing MSMEs is not a simple thing. MSMEs are productive businesses owned by individuals or business entities that meet the criteria of micro-enterprises. Various potential opportunities for business development are supported by the availability of natural resources and potential market opportunities (Purbaningsih et al., 2023). According to Sinaga (2021), MSMEs have challenges with lack of capital, lack of ability in human resource management, and limitations in the use of information technology. The structural features of the industry need to be improved by establishing standards and values to facilitate marketing related to the supply chain of a product (Saediman et al., 2021). Therefore, the Ministry

of Finance (2023), created the theme of the First Ministry of Finance's MSME Program for 2023, namely "One's Ministry of Finance supports MSMEs to grow through digitalization and globalization towards an advanced Indonesia". The main focus is MSME empowerment programs that support the growth of MSMEs through digitalization and globalization efforts, including aspects of financing, fiscal facilities, marketing, training and mentoring, and increasing synergy cooperation and collaboration with other government agencies and the private sector.

One of the villages in Gunungputri District, namely Gunungputri Village, has village potential as an industrial area. Based on Basic Village Data from the Ministry of Home Affairs of the Republic of Indonesia (2022), Gunungputri Village has a high number of self-employed people with data that is always updated and recorded compared to other villages in the Gunungputri District area. In 2019 there were 1,675 entrepreneurs and there was an increase in 2020 to 1,685 entrepreneurs. Meanwhile, in 2021 and 2022 there were 1,311 self-employed people so there was a decline and this happened while there was still a pandemic *covid-19*. Meanwhile, according to research by Fatih (2023), the number of MSMEs in Gunungputri Village with MSMEs in the processed food sector being the majority, around 68.5 per cent of all business actors, such as grocery stalls around 13.7 per cent, MSMEs in the handicraft sector around 4.11 per cent, MSMEs in the clothing sector around 4.11 per cent, and MSMEs in the doll making sector around 1.37 per cent.

One of the conditions of MSMEs in Gunungputri Village during the COVID-19 pandemic is still having an impact on the development of MSMEs. External factors include reduced consumer buying interest so that MSME players are unable to achieve the targeted level of sales and profit growth and one internal factor is that MSME players are not yet ready to access technology and digital skills to share information with suppliers or consumers. With the supply chain management practices implemented by MSME actors in Gunungputri Village, it is hoped that they will be able to maximize the performance of MSMEs. Based on these thoughts, became the motivation for the author to research the related topic "The Influence of Supply Chain Management Strategy on the Performance of MSMEs in Gunungputri Village, Bogor Regency using the SEM Method (*Structural Equation Modeling*)".

B. Methodology

Research Population and Sample

This research was conducted in Gunungputri Village, Gunungputri District, Bogor Regency. This type of research is quantitative research. Sampling techniques, namely *non-probability sampling* in the PLS-SEM program using estimation techniques *Maximum Likelihood* (ML) with a minimum sample size of five times the indicator (Santoso, 2018). So sampling with five times 29 indicators totaled 145 processed food MSMEs in Gunungputri Village, Gunungputri District, Bogor Regency. The data used in this research is primary data and secondary data. Secondary data was obtained by filling out questionnaires with respondents. Meanwhile, secondary data was obtained from reports, documents and previous research.

Data Analysis Method

The data that has been collected is then processed using the SEM method (*Structural Equation Modeling*) with the PLS approach (*Partial Least Square*). Calculations and data analysis using software Smart-PLS 4.0. The following are the steps for analyzing data using SmartPLS 4.0.

1. First, evaluate the measurement model (*outer model*): validity test and reliability test. The validity test is tested with *convergent validity* and *discriminant validity*. Meanwhile, the reliability test uses *composite reliability* and *Cronbach's alpha*.
2. Next, testing the structural model (*inner model*) is done with the approach *Q-square*, *F-square*, and *model fit*.

3. Then proceed to partial hypothesis testing with the T-statistical test, *P-values*, and *original sample estimate*. Meanwhile, simultaneous hypothesis testing uses tests *R-squared*.

C. Findings and Discussion

The PLS-SEM model was evaluated in two parts. First, evaluate the *outer model* by paying attention to the value of *outer loading* (> 0.5 , ideally > 0.7), *average variance extracted* (AVE) (> 0.5), and *composite reliability* (> 0.8). Second, the evaluation *inner model* includes value *predictive relevance* (*Q square*) (> 0), value *F square* (0.02 identifies a small effect; 0.15 identifies a medium effect; and 0.35 identifies a large effect), and model fit. The variables in this study consist of one exogenous variable, namely supplier relationship strategy (X1), consumer relationship strategy (X2), information sharing (X3), information quality (X4), delays (X5), warehouse management (X6), and forecasting. (X7). Meanwhile, the endogenous variable is the performance of MSMEs (Y). The structural model is presented using Smart PLS software.

1. Measurement Model Testing (*Outer Model*)

According to Ghazali and Latan (2020), testing measurement models or *outer models* illustrates how each indicator block relates to its latent variable. The use *outer model* aims to test the construct validity and reliability of the instrument. This test is very important to evaluate the extent to which the research instrument can measure what it is supposed to measure. The consistency of responses from respondents to question items in questionnaires or measurement research instruments carried out through measurement models involves convergent validity, discriminant validity, *Cronbach's alpha*, and *composite reliability* (Ghozali and Latan, 2020).

1.1 Validity Test

The validity test on PLS-SEM uses convergent validity and discriminant validity. According to Hair *et al* (2019), convergent validity with parameter values *loading factor* greater than 0.70; then the construct can explain its indicators and discriminant validity with value parameters *cross loading* greater than 0.70 as well as value *loading factor* variable is greater than *cross loading* each indicator. The following is a convergent validity test by displaying the values *loading factor* as a variable measure in the table below.

Table 1. Values Loading Factor for Each Variable

Variable	Indicator	Loading Factor	Critical Limit	Information
Supplier Relationship Strategy	SHP 1	0,817	0,700	Valid
	SHP 2	0,797	0,700	Valid
	SHP 3	0,886	0,700	Valid
Consumer Relations Strategy	SHK 1	0,905	0,700	Valid
	SHK 2	0,899	0,700	Valid
	SHK 3	0,886	0,700	Valid
Sharing information	BIN 1	0,816	0,700	Valid
	BIN 2	0,832	0,700	Valid
	BIN 3	0,853	0,700	Valid
	BIN 4	0,925	0,700	Valid
Information Quality	KIN 1	0,796	0,700	Valid
	KIN 2	0,776	0,700	Valid
	KIN 3	0,844	0,700	Valid
	KIN 4	0,795	0,700	Valid
Delay	PND 1	0,847	0,700	Valid
	PND 2	0,808	0,700	Valid
	PND 3	0,926	0,700	Valid
Warehouse Management	AND 1	0,920	0,700	Valid
	AND 2	0,882	0,700	Valid
Forecasting	PRM 1	0,959	0,700	Valid

	PRM 2	0,964	0,700	Valid
MSME performance	1 YEAR	0,869	0,700	Valid
	2 YEARS	0,866	0,700	Valid
	3 YEARS	0,824	0,700	Valid
	4 YEARS	0,786	0,700	Valid
	5 YEARS	0,877	0,700	Valid
	6 YEARS OLD	0,816	0,700	Valid
	7 YEARS OLD	0,820	0,700	Valid
	8 YEARS OLD	0,821	0,700	Valid

Source: SmartPLS Processed Data, 2024

Based on the table above, it is known that the value *loading factor* obtained from each indicator is ≥ 0.7 . Thus these indicators are declared valid. After that, a discriminant validity test was carried out by looking at the values *cross-loading* or comparing values *loading factor* variable is greater than *cross-loading* each variable. Below you can see the values *cross-loading* in the table.

Table 2. Values Loading Cross Every Variable

Variable	BIN	KIN	AGE	AND	PND	PRM	CS	SHOP
BIN1	0,816	0,548	0,470	0,340	0,552	0,561	0,395	0,262
BIN2	0,832	0,428	0,483	0,342	0,555	0,496	0,428	0,266
BIN3	0,853	0,473	0,542	0,426	0,482	0,370	0,411	0,174
BIN4	0,925	0,617	0,484	0,398	0,640	0,487	0,447	0,251
KIN1	0,530	0,796	0,368	0,319	0,561	0,416	0,357	0,012
KIN2	0,560	0,776	0,360	0,253	0,483	0,518	0,282	0,030
KIN3	0,491	0,844	0,479	0,314	0,580	0,358	0,391	0,129
DO 4	0,353	0,795	0,360	0,228	0,434	0,279	0,340	0,117
THE GODFATHE R1	0,546	0,395	0,869	0,328	0,399	0,318	0,289	0,352
KUM2	0,625	0,438	0,866	0,430	0,493	0,413	0,360	0,277
KUM3	0,410	0,424	0,824	0,390	0,406	0,355	0,407	0,357
KUM4	0,397	0,350	0,786	0,489	0,342	0,253	0,456	0,086
KUM5	0,428	0,361	0,877	0,444	0,313	0,254	0,381	0,171
KUM6	0,488	0,480	0,816	0,402	0,476	0,355	0,386	0,219
KUM7	0,498	0,398	0,820	0,331	0,358	0,370	0,278	0,272
NUMBER 8	0,436	0,438	0,821	0,419	0,353	0,290	0,396	0,289
MPE1	0,420	0,347	0,470	0,920	0,335	0,262	0,714	-0,012
MPE2	0,373	0,277	0,392	0,882	0,280	0,131	0,750	0,057
PND1	0,557	0,445	0,385	0,310	0,847	0,445	0,373	0,137
PND2	0,505	0,679	0,388	0,297	0,808	0,438	0,378	0,023
PND3	0,608	0,548	0,451	0,285	0,926	0,532	0,369	0,053
PRM1	0,550	0,494	0,368	0,238	0,559	0,959	0,295	0,220
PRM2	0,516	0,439	0,390	0,195	0,500	0,964	0,299	0,250
KS1	0,400	0,390	0,417	0,780	0,423	0,207	0,905	0,053
KS2	0,464	0,403	0,384	0,647	0,366	0,312	0,899	0,174
SHK3	0,459	0,363	0,379	0,746	0,370	0,319	0,886	0,188
SHP1	0,272	0,192	0,289	-0,040	0,172	0,396	0,057	0,817
SHP2	0,230	0,025	0,205	0,126	0,024	0,048	0,260	0,797

SHP3	0,185	-0,003	0,264	-0,002	-0,012	0,116	0,099	0,886
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Source: SmartPLS Processed Data, 2024

Based on the table above, it can be stated that the value *cross-loading* each indicator has a value above 0.70 and each indicator has the greatest value when connected to the latent variable compared to when connected to other latent variables. This shows that each variable *manifests* In this research, it is appropriate to explain the latent variables and prove that the discriminant validity of all indicators is valid.

1.2 Reliability Test

Test the reliability of PLS-SEM by looking at the values of *Cronbach's alpha*, *composite reliability*, and *average variance extracted* (AVE) on each variable. According to Hair *et al* (2019), the value of *Cronbach's alpha* and *composite reliability* is above 0.70 and an AVE value is above 0.50, each indicator has high reliability. The following is an explanation of the reliability test in the table below.

Table 3. Cronbach's Alpha and Composite Reliability

Variable	<i>Cronbach's alpha</i>	<i>Composite reliability</i>	<i>Average variance extracted (AVE)</i>	Information
SHP	0,784	0,873	0,696	Reliable
CS	0,878	0,925	0,804	Reliable
BIN	0,879	0,917	0,736	Reliable
KIN	0,817	0,879	0,645	Reliable
PND	0,825	0,896	0,742	Reliable
AND	0,771	0,896	0,812	Reliable
PRM	0,919	0,961	0,925	Reliable
AGE	0,938	0,949	0,698	Reliable

Source: SmartPLS Processed Data, 2024

Based on the table above, it can be seen that the value *Cronbach alpha* and *composite reliability* of all research variables are above 0.7. Meanwhile, the AVE value for all research variables is above 0.5. These results indicate that each variable has met *Cronbach alpha*, *composite reliability*, and AVE so it can be concluded that all variables have a high level of reliability.

2. Structural Model Testing (Inner Model)

According to Ghazali and Latan (2020), structural model testing (*inner model*) illustrates the relationship or strength of estimation between latent variables or constructs that are built based on the substance of the theory. Structural model testing acts as a structural framework used to predict causal relationships between latent variables.

2.1 Q-square

The first test is on the structural model, viz *Q-square* with the optimal value being one that exceeds 0. Meanwhile, according to Hair *et al* (2019), *q-square* is grouped into three categories, namely 0 (low prediction level); 0.25 (medium prediction level); and 0.50 (high prediction level). Here are the values *q-square* obtained in the table below.

Table 4. Values Q-square

Variable	<i>Q-square</i>	Information
MSME performance	0,402	Moderate level of prediction

Source: SmartPLS Processed Data, 2024

Based on the data presented in the table above, it is known that the value *Q-square* The endogenous variable has a value above 0.25 and less than 0.50, so it is a medium prediction level. By looking at these values, it can be concluded that this research has good observations or is good because the value *Q-square* is more than zero.

2.2 F-square

Value measurement *F-square* to determine the level of influence of exogenous variables on endogenous variables. According to Hair *et al* (2017), the *F-square* of 0.02 (small effect); 0.15 (medium effect); and 0.35 (large effect). Here are the values *F-square* for each exogenous variable in the Table below.

Table 5. Values *F-square* Every Variable

Variable	<i>F Square</i>	Information
Supplier Relationship Strategy	0,087	The effect is small
Consumer Relations Strategy	0,017	The effect is small
Sharing information	0,038	The effect is small
Information Quality	0,033	The effect is small
Delay	0,011	The effect is small
Warehouse Management	0,103	The effect is small
Forecasting	0,001	The effect is small

Source: SmartPLS Processed Data, 2024

Based on the table above, it can be seen that each exogenous variable influences the endogenous variable, namely consumer relationship strategy, consumer relationship strategy, information sharing, information quality, delays, warehousing management, and forecasting including small effects.

2.3 Model Fit

Measuring model fit by looking at SRMR values below 0.08 indicates a fit model (Hair *et al*, 2017). Meanwhile, if the value *chi-square* exceeds 0.9 and the NFI is close to one, then this statement proves that the new model proposed by researchers in this study has a good level of suitability (Fahmi *et al* 2023). The following is a presentation of the model fit in the table below.

Table 6. SRMR Value, *Chi-square*, and NFI

Variable	SRMR	Chi-square	NFI
MSME performance	0,077	1.390,028	0,638

Source: SmartPLS Processed Data, 2024

Based on the table above, the SRMR value is 0.077 which is less than 0.08 indicating a fit model. Meanwhile, the value *chi-square* was 1,390.028, exceeding 0.9 and NFI was 63.8% (0.638). These results indicate improvements that the model proposed in this study has good suitability (*model fit*).

3. Partial Hypothesis Testing

Partial hypothesis testing is carried out to determine whether each exogenous variable individually has a significant influence on the endogenous variable. This test further uses the T-statistic, P-value, and tests the *original sample estimate*. The results of the T-statistical test can be found in the Figure and Table below.

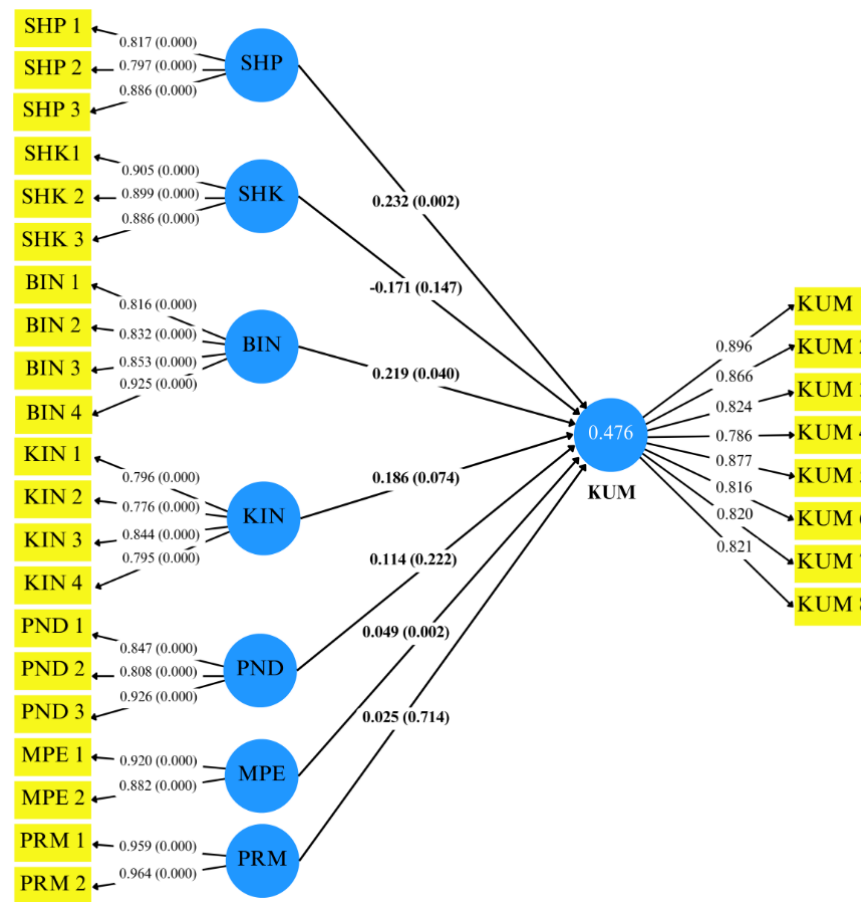


Figure 1. Partial Hypothesis Testing

Table 7. T-statistical value, P-value, and *Original Sample Estimate*

Variable	T-statistics	P-value	<i>Original Sample Estimate</i>	Information
SHP -> KUM	3,169	0,002	0,232	Hypothesis accepted
SHK -> KUM	1,457	0,147	-0,171	Hypothesis rejected
BIN -> SAND	2,072	0,040	0,219	Hypothesis accepted
KIN -> KUM	1,801	0,074	0,186	Hypothesis rejected
PND -> KUM	1,227	0,222	0,114	Hypothesis rejected
AND -> TEN	3,158	0,002	0,049	Hypothesis accepted
PRM -> KUM	0,367	0,714	0,025	Hypothesis rejected

Source: SmartPLS Processed Data, 2024

3.1 The Influence of Supplier Relationship Strategy on MSME Performance

Based on the test results in Figure 1 and Table 7 above, it is known that the Supplier Relationship Strategy (SHP) has a positive ($\beta = 0.232$) and significant effect ($t = 3.169$; $p = 0.002$). Thus, the hypothesis in this study is accepted. This shows that the supplier relationship strategy influences the performance of MSMEs in Gunungputri Village, this is because MSME actors already have access to quality raw materials with suppliers by carrying out good cooperation, whereas MSME actors already have regular suppliers who can ensure the supply of raw materials. can be fulfilled for MSME players by offering competitive prices with other suppliers.

3.2 The Influence of Consumer Relations Strategy on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Consumer Relations Strategy (SHK) has a negative effect ($\beta = -0.171$) and is not significant ($t = 1.457$; $p = 0.147$). Thus, the hypothesis in this study is rejected. This shows that consumer relations strategies do not affect the performance of MSMEs in Gunungputri Village, this is because MSME actors only focus on selling their products to consumers without making any effort to find out consumer responses to

the products they market. So there is no responsive interaction between MSME players and consumers.

3.3 The Effect of Information Sharing on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Information Sharing (BIN) has a positive ($\beta = 0.219$) and significant effect ($t = 2.072$; $p = 0.040$). Thus, the hypothesis in this study is accepted. This shows that MSME actors in Gunungputri Village have access to exchange information between MSME actors, namely the MSME forum and groups on the WhatsApp application. MSME players can exchange information regarding the products being marketed, exhibition activities that MSME players can participate in to promote their products, and programs that can help MSME players. So that MSME actors can exchange experiences and learning as well as strengthen networks between MSME actors suppliers and consumers.

3.4 The Influence of Information Quality on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Information Quality (KIN) has a positive effect ($\beta = 0.186$) and is not significant ($t = 1.801$; $p = 0.074$). Thus, the hypothesis in this study is rejected. This shows that MSME actors in Gunungputri Village are less aware of the importance of information quality. MSME actors more often carry out information discussions that are not needed or outside the context of MSMEWhatsApp with suppliers and consumers, compared to discussions related to the quality of raw materials, the availability of raw materials for production operations in MSMEs and exchanging information with consumers regarding the quality of products marketed to the actors. MSMEs have fulfilled it

3.5 Effect of Delays on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Delay (PND) has a positive effect ($\beta = 0.114$) and is not significant ($t = 1.227$; $p = 0.222$). Thus, the hypothesis in this study is rejected. This shows that MSME actors in Gunungputri Village are afraid of the risks of producing in large quantities because they do not have a clear plan and goal for their products to be marketed. So MSMEs often postpone production if the stock of goods is still sufficient for the consumers they have targeted to offer their products to.

3.6 The Influence of Warehouse Management on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Warehouse Management (MPE) has a positive ($\beta = 0.409$) and significant effect ($t = 3.158$; $p = 0.002$). Thus, the hypothesis in this study is accepted. This shows that MSME actors in Gunungputri Village can optimize space, both in private homes by providing special rooms for storing raw materials and products and providing buildings for MSME operations.

3.7 The Effect of Forecasting on MSME Performance

Based on the test results in Figure 1 and Table 7 above, Consumer Relations Strategy (SHK) has a positive effect ($\beta = 0.025$) and is not significant ($t = 0.367$, $p = 0.714$). Thus the hypothesis in this research is rejected. This shows that market uncertainty is one of the factors causing MSMEs in Gunungputri Village to be unable to predict product trends that are in demand by consumers, competition, and consumer economic conditions that are difficult to predict.

4. Simultaneous Hypothesis Testing

Test *R-square* basically evaluates whether all exogenous variables have a collective influence on endogenous variables. This test is used to jointly test whether the overall model is significant. Results from the test *R-square* simultaneously can be found in the table below:

Table 8. Values *R-square*

Variable	<i>R-square</i>	Information
AGE	0,449	Medium influence

Source: SmartPLS Processed Data, 2024

Based on the table above, the research results show that the value *R-square* of 0.449. So it can be explained that all exogenous constructs, namely supplier relationship strategy, consumer

relationship strategy, information sharing, information quality, delays, warehouse management, and forecasting simultaneously influence MSME performance by 0.449 or 44.9 per cent. stated *R-square* more than 25 per cent but less than 50 per cent, then the influence of all exogenous constructs, namely supplier relationship strategy, consumer relationship strategy, information sharing, information quality, delays, warehouse management, and forecasting on the endogenous variable KUM (UMKM Performance) is moderate.

D. Conclusion

Based on the results of the analysis and discussion carried out in this research, the researcher drew the following conclusions.

1. The results of the research show that the partial influence obtained by supplier relationship strategies, information sharing, warehousing has a positive and significant effect on the performance of MSMEs in Gunungputri Village, Gunungputri District, Bogor Regency. Meanwhile, consumer relations strategies, the quality of forecasting delay information have no effect on the performance of MSMEs in Gunungputri Village, Gunungputri District, Bogor Regency.
2. The research results show that the simultaneous influence of supply chain management practices has an effect of 44.9 percent (medium influence) on the performance of MSMEs in Gunungputri Village, Gunungputri District, Bogor Regency.

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Analysis of Tuna Fish Marketing Systems and Strategies

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Abstract

Indonesia is a country that has great tuna potential. Indonesia is one of the tuna exporting countries on the world market. Kolaka is one of the districts that has a large catching capacity for tuna. Sales of tuna fish cannot be separated from relationships with marketing institutions, such as collecting traders, wholesalers and retailers, which are marketing institutions that connect producers and consumers. Research objectives are to determine the marketing channels for tuna fish, to determine the marketing margin of each marketing institution and tuna marketing channels, to determine the efficiency of tuna marketing, to determine the size of *Farmer's Share* received by fishermen, and to find out the Tuna Fish marketing strategy in Kolaka Regency. The results of this research are that two marketing channels occur, of the two marketing channels, namely marketing channel I is less efficient with an efficiency value of 89.79% than marketing channel II with an efficiency value of 86.27%. The marketing margin in marketing pattern I obtains a relatively large total margin compared to the total margin in marketing pattern II. *Farmer's share* obtained from each marketing channel is different. The tuna marketing strategy that can be used is development network market, promotion, product innovation as well as utilizing additional capital from the Government/Banks, improving the quality of human resources with training, using online media to promote new prices, making processed tuna fish.

Keywords: Marketing, tuna fish, margin, farmers share, marketing strategy

A. Introduction

Indonesia is a country that has great tuna potential. Starting in 2004, Indonesia became the number one country in producing tuna and had a target of increasing capture fisheries by 0.5%/year [1]. The volume and value of exports of tuna fishery commodities have increased in the last 5 years, according to statistical data on exports of fishery products, the volume of tuna exports has increased on average by 4.30% and the production value has increased by 13.61% [2]. Indonesia is one of the tuna exporting countries on the world market. The countries with the main market share for tuna from Indonesia are Japan, America and the European Union [3]. Kolaka is one of the districts that has a large catching capacity for tuna.

Sales of tuna fish cannot be separated from relationships with marketing institutions, such as collecting traders, wholesalers and retailers, which are marketing institutions that connect producers and consumers. Marketing tuna fish in Kolaka is faced with several problems, including price and marketing costs. Fishermen always rely on the selling price offered by collecting traders through assessments. In general, fishermen act as price takers, which causes revenue at the fishing level to be the lowest. This happens because fishermen do not have bargaining power compared to other marketing institutions and do not have complete information regarding selling prices on the market. In addition, the distance of the marketing location from the production centre allows fishermen to face risks if they sell their catch directly to final consumers, namely in

the form of transportation costs. Meanwhile, if they sell their harvest in their production area, fishermen face the risk that the selling price is too low. For this reason, researchers are interested in conducting research with the theme "Analysis and Marketing Strategy for Tuna Fish in Kolaka Regency".

Research related to "Analysis of Tuna Fish Marketing Systems and Strategies in Kolaka Regency" really needs to be carried out to overcome the problem of tuna marketing at the fisherman and trader level. As information material for marketing actors or marketing institutions in selecting and determining marketing channels that can increase marketing efficiency and provide benefits to all parties involved, including fishermen, traders and consumers.

B. Methodology

1. To find out the marketing channels and marketing institutions and institutions involved using descriptive methods. Descriptive research is research that tries to find appropriate and sufficient explanations of all activities, objects, processes and people. Descriptive research is concerned with collecting facts, identifying and predicting relationships within and between variables. Descriptive research is collecting data based on factors that support the research object, then analyzing these factors. Describe the marketing conditions for Tuna fish in Kolaka Regency and analyze which marketing channel patterns are more efficient that traders can use.

2. To find out what the marketing margin for Tuna Fish is in Kolaka Regency. To find out the marketing margin, it is calculated using the marketing margin formula. Marketing margin is the difference between prices at the fisherman or producer level and prices at the final consumer level

$$M = H_p - H_b \dots \dots \dots (1)$$

Where :

M = Marketing margin (Rp)

HP = Selling price at producer level (Rp/Kg)

Hb = Purchase price at the final consumer level (Rp/Kg)

3. To find out the level of efficiency of tuna fish marketing in Kolaka Regency. To find out the marketing margin, use a formula to calculate marketing efficiency. Marketing efficiency is a measure of the productivity of the marketing process by comparing the resources used to the output produced during the marketing process.

$$EP = \frac{BP}{NP} \times 100\% \dots \dots \dots (2)$$

If: EP whose value is < 1 = Most Efficient

EP with a value of 1 > = Not Efficient

Where :

EP = Marketing efficiency(%)

BP = Total marketing costs (Rp/L)

NP = Total value of products marketed (Rp/L)

4. To find out the size *farmer's share* Tuna fish marketing in Kolaka Regency.

To find out the size *fermer's share* the following formula is used:

$$Fs = \frac{Pf}{Pr} \times 100\% \dots \dots \dots (3)$$

Where :

FS = share of price received by farmers (%)

Pf= price at farmer level

Pr= price at the consumer level

5. SWOT analysis

The purpose of data analysis is an attempt to formulate answers to questions regarding aspects of strategic management based on the internal and external environment which are strengths (*Strength*), Weakness (*Weakness*), Chance (*Opportunity*), and Threat (*Threat*). The Tuna Fish marketing strategy uses a qualitative approach, namely SWOT Analysis (*Strength, Weakness, Opportunity, Threat*).

A company can develop strategies to overcome external threats and seize existing opportunities. The analytical process of formulating and evaluating strategies is called strategic planning.

After collecting all the information that influences the company's survival, the next stage is to utilize all this information in quantitative models for strategy formulation. We should use several models at once to obtain a more complete and accurate analysis.

The models that can be used are as follows:

a. SWOT Matrix

After all the data that has been collected is in the form of field notes, researcher comments, descriptions of research informants, documents in the form of reports, articles, and other data sources related to the analysis of Tuna Fish marketing strategies. Next, it was analyzed using SWOT analysis by conducting a situation analysis related to Tuna Fish marketing strategies.

IFAS EFAS	STRENGTHS (S) • Determine 5-10 internal strength factors	WEAKNESSES (W) • Determine 5-10 internal weakness factors
OPPORTUNITIES (O) • Determine 5-10 External opportunity factors	SO STRATEGY Create strategies that use strengths to take advantage of opportunities	WO STRATEGY Create strategies that minimize weaknesses to take advantage of opportunities
TREATS (T) • Determine 5-10 External threat factors	STRATEGY ST Create strategies that use strengths to overcome threats	WT STRATEGY Create strategies that minimize weaknesses and avoid threats

Figure 1. SWOT Matrix

Based on Figure 1, it can be seen that the SWOT Matrix produces four cells of possible strategic alternatives, including:

- SO Strategy
This strategy was created based on the company's way of thinking, namely by utilizing all strengths to seize and exploit opportunities as much as possible.
- ST Strategy
Strategy in using the company's strengths to overcome threats.
- WO Strategy
The strategy implemented is based on exploiting existing opportunities by minimizing existing weaknesses.
- WT Strategy
A strategy based on defensive activities and trying to minimize existing weaknesses and to avoid threats.

b. Internal External Matrix

To determine a strategy, use SWOT analysis which then produces a SWOT diagram. According to Rangkuti (1997), the SWOT diagram is used to see the strategic position in the industry. The X value and Y value are obtained from the internal and external factor matrix.

$$X = \frac{S-W}{2} \text{ and } Y = \frac{O-T}{2} \quad (3.1)$$

Where: **S** = *Strength* (Strength)

IN = *Weaknesses* (Weakness)

O = *Opportunities* (Opportunity)

T = *Threats* (Threat)

Level of Decision Making

The decision-making stage is the stage that produces a strategic plan based on information that has been analyzed using several analysis models. The goal is to develop a strategy so that it is in accordance with the company's mission, goals and policies.

C. Findings and Discussion

1. Marketing Channels

Marketing institutions are people or business entities or institutions that are directly involved in the flow of goods from producers to consumers. These marketing institutions can be in the form of middlemen, collecting traders, wholesalers and retailers. Based on the results of the research that has been carried out, it can be explained the pattern of tuna marketing channels in Kolaka Regency. Data collection to determine the various seaweed marketing channels used was obtained by tracing tuna marketing channels from fishermen to consumers. Based on the results of research conducted on tuna fish marketing in Kolaka Regency, there are two marketing channels, namely as follows:

Marketing channels I

Tuna Fishermen → Collector Traders → Final Consumers (Kolaka City)

Marketing channels II

Tuna Fishermen → Collecting Traders I → Wholesalers → Final Consumers (Kolaka City)

2. Marketing Margin Analysis

The amount of marketing margin in each tuna marketing channel is influenced by the respective prices applicable to each fisherman and marketer. Marketing margin is calculated based on the reduction of the sales price from the purchase price at each marketing institution or can be seen using the following formula:

Table 3. Tuna Fish Marketing Margin Analysis in Channels I and II in Kolaka Regency, 2023

No	Description	Channel I		Channel II	
		Rp/Kg	Margin percentage (%)	Rp/Kg	Margin percentage (%)
1.	Fisherman - Selling price	23.500		27.500	
2.	Collector traders - purchase price - selling price Marketing margin	23.500 27.500 4.000		27.500 28.500 1.000	
3.	Wholesalers				

	- selling price			25.500	
	- purchase price			28.500	
	Marketing margin			1.000	
	Final consumer	3.000		27.000	
	Total marketing margin	7.000	21,8%	2.000	36,8%

Sourcer : Primary data processed in 2023

In table 3 it can be concluded that in marketing channel I, a total margin of IDR 7,000/kg is obtained, where the margin is obtained from collecting traders, namely the buying price for tuna from fishermen is IDR 23,500, then the selling price to collecting traders is IDR 27,500, so the price difference at the producer level and consumer, which is IDR 4,000, while in marketing channel II a total margin is obtained of IDR 1,000/kg, where the margin is found at collecting institutions and wholesalers. Collecting traders buy Tuna fish from fishermen for IDR 23,500 then sell to wholesalers for IDR 27,500 so the price difference is IDR 4,000, then wholesalers buy Tuna fish from collecting traders for IDR 27,500 then sell them to district collecting traders for IDR 28,500 So the difference in price obtained is IDR 1,000. Sudiyono (2001) states that the length and shortness of the marketing channel depends on the distance between the producer and the consumer, the further the distance between the producer and the consumer, the longer the channel, the smaller the production scale, the channel tends to be long because it requires intermediaries in distribution, whether the product is delivered quickly or not. Perishables require short marketing channels because consumers must immediately accept them. The financial situation of merchant entrepreneurs with strong financial positions tends to be able to carry out more marketing functions and shorten marketing channels.

3. Analysis *Farmer's Share*

Marketing margin is not the only indicator that determines the marketing efficiency of a commodity. One other indicator is to compare the prices paid by final consumers or what is usually called *farmer's share*, and expressed as a percentage. Rosmawati (2011) *farmer's share* namely the percentage of price received by farmers compared to the selling price to collecting traders. *Farmer's share* in a marketing activity it can be used as a basis or benchmark for marketing efficiency. The higher the percentage rate *farmer's share* What farmers receive is said to be the more efficient the marketing activities carried out and conversely the lower the percentage level *farmer's share* received by farmers, the lower the level of marketing efficiency will be.

Table 4. Analysis *Farmer'Share* Tuna fish marketing in Channels I and II in Kolaka Regency in 2023.

Marketing channel	Prices at producer level (Rp/Kg)	Prices at the consumer level (Rp/Kg)	<i>Farmer share</i>
I	23.500	27.500	90%
II	27.500	28.500	96%

Based on Table 4 from the results of the data obtained from the analysis *farmer's share* in each Tuna fish marketing channel, namely where marketing channel I has one marketing institution in it until it reaches the final consumer, the percentage obtained by fishermen in this marketing channel is 90%, marketing channel I can be said to be efficient because from the results of data analysis the share received by farmers (*Farmer's share*) > 50%. The results of this research are in accordance with previous research conducted by Cherina (2020), where marketing channel I is said to be the most efficient channel because it can be seen that the share received by tuna fishermen (*Farmer's share*) > 50%, namely the results obtained are 90%. Meanwhile, in

marketing channel II there are two marketing institutions in which the percentage obtained by fishermen from this channel is 96%, marketing channel II can be said to be efficient because of the results of data analysis of the share received by farmers (*Farmer's share*) > 50%. The results of this research are in accordance with previous research conducted by Cherina (2020) where marketing channel II is said to be the most efficient channel because it can be seen that the share received by tuna fishermen (*Farmer's share*) > 50%, namely the results obtained were 96%. The results of this research are in accordance with previous research conducted by Cherina (2020) which examined seaweed marketing margin analysis (*eucheuma cottoni*) in this research the author also discusses calculations *farmer's share* where if the share received is above 50% then it can be said to be efficient, whereas if it is less than 50% then it is inefficient.

4. Marketing Channel Efficiency Analysis

Efficient marketing is the ultimate goal to be achieved in the marketing system, where the marketing system provides satisfaction to every party involved, producers, consumers and marketing institutions. The level of efficiency in the 2 seaweed marketing channels in Wakambangura village, Mawasangka sub-district, Central Buton regency, can be seen in Table 4.4 as follows:

Table 5. Analysis of Tuna Marketing Channel Efficiency in Kolaka Regency, 2023.

Marketing channel	Consumer – producer prices (Rp/Kg)	Consumer prices (Rp/Kg)	Efficient (%)
I	23.500	27.500	89,79%
II	27.500	28.500	86,27%

Source : Primary data processed in 2023

Table 5 can be seen from the marketing pattern I. Tuna fish marketing channels in Kolaka Regency are said to be less efficient because from the results of the analysis obtained or obtained the margin percentage is relatively large compared to the farmer's share received by farmers, which is 90% or with a decision rule of 0 - 30 % is said to be efficient. In marketing pattern I, the marketing channel is relatively short because it only involves one marketing agency. The results of this research are in accordance with previous research conducted by Cherina (2020) based on high and low marketing margins and farmer's share, marketing channel I is the marketing channel that is less economically efficient in Kolaka Regency. This is because the farmer's share value is the highest. This is because marketing channel I has the highest farmer's share value, namely 89.79%. In marketing pattern II, the Tuna fish marketing channel in Kolaka Regency is said to be less efficient because from the results of the analysis obtained or obtained the margin percentage is relatively large, namely 86.27%, meaning that the decision rule is 34 - 67%, which means it is less efficient. As is known, marketing is efficient if the marketing channel has a low margin percentage value and the percentage value of the share received by farmers (*farmer's share*) tall. In marketing pattern II, the marketing channel is relatively long because it involves two marketing institutions.

5. Tuna Marketing Strategy Analysis

Results of strategy formulation in development I remember using SWOT Matrix analysis. The main strategy recommended consists of four types of strategies, namely SO, WO, ST, and WT. SWOT Matrix in development tuna fish trader that is:

IFAS EFAS	STRENGTHS (S) 1.Varied products 2.Prices vary 3.Promotion was carried out quite well through online media 4.The division of labor is clear 5.The target market is all ages	WEAKNESSES (W) 1.The product is not durable 2.Small profit margin 3.Lack of HR education 4.Has no processed products 5.Product distribution is only in the area around Kolaka
OPPORTUNITIES (O) 1.The availability of a market that is always growing 2.The level of people's purchasing power is high 3.Located in a market environment 4.Tuna fish traders vary in the market 5.Additional business development capital from banks/government	SO STRATEGY 1.Increasing market reach and expanding markets (S1, S5, O1, O2) 2.Mimplement promotions to attract consumers (S3, O4) 3.Utilizing capital from Banks/government for mlooking at him (O4, O5) 4.Adding product innovation in terms of quality to meet consumer taste needs (S6, O3, O5)	WO STRATEGY . Improving the quality of human resources with training (W3, O5) . Opening a new business to be close to consumers (W6, O3)
THREE (T) 1.Competitors with almost the same type of fish seller 2.Increase in operational costs 3.Bored with other types of tuna fish products 4.Merchant Development 5.The people's cost of living is getting higher	STRATEGY ST 1. Increase product prices according to operational cost prices (S2, T2) 2. Utilizing online media to obtain more information from consumers (S7, T4)	WT STRATEGY 1. Making preparations from tuna fish raw materials (W5, T1) 2. Producing according to orders (W1, T2)

Source: Primary Data Processed 2023

Furthermore, based on the results of the SWOT analysis in Figure 4.1, there are several strategies which are then formulated into several core strategies which are similar in combination to the selected alternative strategy. The selected strategies are arranged based on the priority order of application and implementation of the marketing strategy I remember. The sequence of strategies includes the following:

- a. Strategy I: Development network market, promotion, product innovation and utilizing additional capital from the Government/Bank
- b. Strategy II: Improving the quality of human resources by training market players

- c. Strategy III: Utilization of online media to promote new prices
- d. Strategy IV: Make preparations from tuna fish as raw materials

D. Conclusion

Based on the results of the analysis and discussion in this research, conclusions can be drawn that is, there are two marketing channels that occur, namely marketing channel I, namely fishermen - collectors - consumers, marketing channel II, namely fishermen - collectors - wholesalers - final consumers. The marketing margin in marketing pattern I obtains a relatively large total margin compared to the total margin in marketing pattern II. Marketing pattern I obtains a margin of IDR 4,000/kg, while marketing pattern II obtains a margin of IDR 3,000/kg. Based on the marketing efficiency analysis, the results obtained from both marketing channels are that marketing channel I is less efficient with an efficiency value of 89.79% than marketing channel II with an efficiency value of 86.27%. *Farmer's share* obtained from each marketing channel is different. Marketing pattern I obtained farmer's share > 50%, namely 90%, and in marketing channel pattern II obtained farmer's share > 50%, namely 96%. Tuna marketing strategies that can be used include: Strategy I: Development network market, promotion, product innovation and utilizing additional capital from the Government/Banks, Strategy II: Improving the quality of human resources with training, Strategy III: Utilizing online media to promote new prices, Strategy IV: Making processed tuna fish.

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Study Of The Impact Of Changing Patterns From Cocoa Farming To Corn Business On Farmers' Socio-Economic

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Abstract

Cocoa farmers in Matangnga subdistrict, Polewali Mandar district, specifically in Matangnga subdistrict, have been producing cocoa for decades. However, in the last 2 years, many cocoa farmers have switched to corn farming, even though cocoa is Indonesia's mainstay commodity and the 3rd largest cocoa producer in the world. This research aims to find out the perceptions of cocoa farmers regarding changes in farming patterns from cocoa to corn, to find out the impact on farmers' socio-economic conditions and to find out how cocoa farmers' income is after changing farming patterns to corn in Matangnga District, Polewali Mandar Regency. The sample determination method in this research uses *purposive sampling*, which is namely a technique that is based on certain considerations made by the researcher based on previously known characteristics or traits of the population, then the researcher determines based on his considerations. The data collection methods are observation, interviews and documentation. The data analysis method used is qualitative descriptive data analysis, namely in the form of a collection of words taken from interviews (questionnaires) given to farmers regarding cocoa and corn farming income analysed using the farming income analysis method.

Keywords: *Farming, cocoa, corn, farmer perceptions, socio-economic impacts*

A. Introduction

Indonesian cocoa is in great demand on the international market because its fat composition differs from cocoa from African countries, especially in terms of its low Free Fatty Acid content and high melting point, as recorded in the 2020 National Leading Plantations statistical data. In 2020, exports of Corn from Indonesia are dominated by processed products, while corn imports are dominated by fresh products. Processed corn exports in 2020 reached 54.29% of the total value of Indonesian corn exports, while imports of fresh corn reached 56.49% of the total value of corn imports in the same year. According to BPS data for 2021, West Sulawesi is one of the main contributors to cocoa production in Indonesia.

Corn production in Polewali Mandar district is ranked fifth out of six districts in West Sulawesi, with production in 2017 of 510 tons. The cocoa planting area according to the West Sulawesi Central Statistics Agency, Matangnga District, shows that in 2016 the planting area was 75 Ha, in 2017 the planting area was 859 Ha, in 2018 the planting area was 2,043 Ha and in 2019 the planting area was 1,983.00 Ha. Meanwhile, the corn planting area in 2016 was 4,881.13 Ha, in 2017 the area was 4,284.95 Ha, in 2018 the area was 4,284.62 Ha and in 2019 the area was 4,284.62 Ha. West Sulawesi, Polewali Mandar district, precisely in the Matangnga sub-district, one of the livelihoods of farmers there is cocoa. Farmers there have been producing cocoa for decades. However, in the last 2 years, many cocoa farmers have switched to corn farming, even

though cocoa is Indonesia's mainstay commodity and the largest cocoa producer. 3rd in the world.

B. Methodology

Place and time of research

This research was carried out from November 2023 to January 2024 in Matangnga Village, Polewali Mandar Regency. Researchers chose the Matangnga sub-district because there was a phenomenon of changing the pattern of cocoa farming to corn farming and it was the second cocoa production in the Matangnga sub-district.

Population and Sample

The population of this research is all cocoa farmers in the sub-district Matangnga, The population of cocoa farmers in Matangnga sub-district is 347 people judging from the number of members of cocoa farmer groups in Matangnga sub-district. Sampling used purposive sampling. As Sugiyono (2016) said, purposive sampling is a data source sampling technique with certain considerations. So the considerations in taking this sample include: 1. The criteria for farmers taken are farmers who have transitioned the commodity from cocoa farming to corn farming. 2. The number of informants used can represent the existing population. So in this study, the respondents used were 21 farmers from the existing population of 347.

Data Analysis

Data collected through interviews and observations with cocoa farmers will be analyzed qualitatively descriptively, namely in the form of a collection of words taken from interviews (questionnaires) given to cocoa farmers in Matangnga Village.

Based on the objectives of this research, the data obtained regarding Cocoa and corn farming income was analyzed using the Farming Income Analysis method. As stated by Soekarwati (2006), farming income is the difference between revenue and all costs. To find out income, it is mathematically formulated as follows:

$$\pi = TR - TC$$

Information:

π = Revenue

TR= Revenue

TC= Total costs

C. Findings and Discussion

1. Farmers' Perceptions of Changing Cocoa Farming Patterns to Corn Farming

Table 2. Farmers' Perceptions

No	A list of questions	Answer Choices				
		SS	S	N	TS	STS
		5	4	3	2	1
1.	The transition from cocoa farming to corn farming is one of the most appropriate efforts to improve farmers' welfare	21	-	-	-	-
2.	Corn farming can provide greater opportunities to increase farmers' income compared to cocoa farming.	21	-	-	-	-
3.	Corn farming can accelerate the erosion of agricultural land, thereby triggering land degradation.	-	-	21	-	-
4.	The risks in managing cocoa farming are much greater than the risks in managing corn farming	-	-	1	19	1

5.	Corn farming provides greater hope for improving the household economy of farmers compared to cocoa farming.	21	-	-	-	-
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Source: Primary Data Processed 2023.

From the questionnaires distributed by researchers in the field, researchers found that cocoa farming income was decreasing due to pests and diseases attacking cocoa plants causing cocoa beans to become rotten, hard, black and sticky so that little cocoa production caused farmers' income to decrease greatly. Farmers are making the switch to corn farming because corn farming can provide greater opportunities to increase farmers' income compared to cocoa farming.

Farmers' perception of being neutral or not knowing about corn farming can accelerate erosion on agricultural land, thereby triggering land degradation. According to (Fitryane Lihawa 2012) states that changing land use to corn can result in damage which impacts the hydrological function of the soil based on variations in rainfall and slope slope. Rainfall capture, infiltration and water storage are greatly reduced, and the distribution system becomes very wasteful. This incident will cause flooding in the rainy season and conversely drought in the dry season.

From the research results obtained in the field, indeed, floods often occur if the rainfall is high because the river that borders the village overflows so that residents who usually want to go to town by car are blocked because the big bridge made by the government is not yet fully finished and it is true that drought occurs in the dry season. This can be seen from the fact that the river connecting the sub-district and Katimbang village is receding and there is little water flowing into the houses of the village community.

2. Socioeconomic Impact of Cocoa Farmers switching to corn

There are eight levels of family welfare according to the National Family Planning Coordinating Board (BKKBN) 2021, namely: the indicators used are income, consumption or family expenses, living conditions, living facilities, health of family members, ease of getting health services, ease of getting you into the education program. education, and ease of obtaining transportation facilities. The research results obtained in the field can be seen in Table 10 as follows:

Table 3. Level of Farmer Welfare in Mtangnga sub-district, Polewali Mandar Regency

No	Indicator	Farmer welfare level	
		Low (0-10.5)	Height (10.6-21)
1	Income	10	11
		(47,62%)	(52,38%)
2	Household consumption	3	18
		(14,29%)	(85,71%)
3	Living conditions	6	15
		(28,57%)	(71,43%)
4	Residential facilities	0	21
		(0%)	(100%)
5	Health	2	19
		(9,52%)	(90,48%)
6	Social community	0	21
		(0%)	(100%)
7	Education	2	19
		(9,52%)	(90,48%)
8	Public transportation (Facilities	7	14

	transportation)	(33,33%)	(66,67%)
Total		30	30
Rate rate		4	4

Source: Primary Data Processed 2023.

Information:

Well-being level High 10.6-21

Low level of well-being 0-10.5

a) Income

Income is the income that farmers get from their results sell the commodity. The welfare of a farming family can be assessed by how much income it earns and how much it spends to fulfil its consumption within a certain period, whether it is the consumption of primary needs in the form of food and clothing or secondary consumption needs (Safrijal, 2022). Table 3 shows that there are 52.38% who are in the high category in terms of numbers 11 farmers mean the average income of cocoa farmers after switching to corn in Matangnga District, Polewali Mandar Regency, with farmer income of IDR 12,854,054 (Twelve Million Eight Hundred Fifty-Four Thousand Fifty-Four Rupiah) per hectare is considered to be in the category high because the amount exceeds the average income of other farmers and farmers have other sources of income apart from agriculture. Meanwhile, 47.62% are in the low category with 10 farmers in the low category because each farmer has different needs and has larger family responsibilities or has special needs that require more money.

b) Household consumption

The welfare of a family can be assessed by how much income it earns and how much it spends to fulfil its consumption within a certain period, whether it is the consumption of primary needs in the form of food and clothing or secondary consumption needs (Safrijal, 2022).

Based on table 3, shows that there are 85.71% are in the high category with 18 farmers in the Matanga subdistrict, Polewali Mandar district having at least two to 3 meals a day, able to consume fish and eggs once a week, agricultural products owned by the farmers It is also consumed personally by the farming family itself so that members of the farming family can buy 1 set of new clothes a year and the clothes for home/school/travelling can be different.

c) Living Conditions

A place to live or a house is one of the primary needs of every family. A family can be classified into the decent living category if they already have a decent place to live. Apart from being a primary need, the residence or house a family lives in can also be an assessment of the social class of the family that occupies it (Safrijal, 2022). Based on table 3, it shows that there are 71.43% included high category with the number of 15 farmers in Matanga sub-district, Polewali Mandar district, meaning that the condition of residence in Matanga sub-district, Polewali Mandar district is very good for the village category, although there are still some respondents who still have cement floors and wooden walls, in the assessment the village community is very good. compared to several residents whose houses are still less livable.

d) Residential Facilities

Living facilities are a very important thing a family in terms of supporting their daily needs. Based on table 10, shows that 100% of farmers in the Matanga sub-district, Polewali Mandar district already have private latrines, electricity, and clean water directly from mountain springs and use gas at home, although they occasionally use firewood because according to the farmers the taste of food cooked in wood more delicious.

e) Health

For health indicators table 10, shows that there are 90.48% included in the high category with 19 farmers, which indicates that their health is guaranteed. Matangnga sub-district has been equipped with health facilities, such as community health centres and Pustu (auxiliary health centres). With these facilities, if a farmer's family member is sick they can immediately be taken to the community health center to receive health services. Apart from that, cocoa farmers who switch to corn farming are also able to pay BPJS taxes every year.

f) Social

The social participation found in cocoa farmer families who switched to corn in Matangnga District is in the high category because 100% of farmers in Matangnga District, Polewali Mandar Regency have a good social life, within the family and in the surrounding community. Based on the results in the field, researchers discovered the fact that in the Matangnga sub-district itself, there are many social activities, including:

- 1) Working together to help one of the farmers clean his land usually called Kesaro, landowners usually provide food and drinks for working farmers.
- 2) If there is a community holding an event, the community works together to help each other
- 3) Religious activities are held once a year by the local government so that teenagers and adults work together with each other help to make it easier for the event to run well.
- 4) Volleyball activities are carried out from mothers to children almost every day in the field

g) Education

The education indicators in Table 10, show that there are 90.48% are in the high category with a total of 19 farmers, meaning that cocoa farmers who have switched to corn farming in the Matanga sub-district, Polewali Mandar district have educational facilities in the form of elementary to high school so that the cocoa farmers who switching to corn farming can send their children to school. To get to a higher level, farmers usually send their children to Polewali Mandar and Majene universities.

h) Public transportation (transportation facilities)

For public transportation indicators (transportation facilities) in Table 10 Shows that there are 66.67% who fall into the high category in terms of numbers 14 farmers means that even though the location is still far from urban areas, members of farming families in Matangnga sub-district, Polewali Mandar district, have no difficulty in getting public transportation when they want to travel to the city.

3. Farmer family income in Matangnga District, Polewali Mandar Regency

The average net income of cocoa farming families in a year after switching to corn farming is IDR 2,885,858 plus rice farming IDR 9,968,196 to IDR 12,854,054 per year. Researchers took rice farming income to see the amount of income of farming families after switching to corn.

D. Conclusion

Cocoa farmers switched to corn due to pests and diseases that attack cocoa plants which cause cocoa beans to become rotten, hard, black and sticky so that cocoa production is low causing farmers' income to decrease greatly so farmers switch to corn with the perception that corn farming provides greater hope for improving the household economy of farmers compared to cocoa farming. The socio-economic impacts obtained in the field by researchers are in the high category with indicators of income, household consumption, living conditions, residential

facilities, health, social community, education and public transportation (transportation facilities). The average net income of cocoa farming families in a year after switching to corn farming is IDR 2,885,858 plus rice farming IDR 9,968,196 to IDR 12,854,054 per year

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Analysis of Business Income of Various Small and Medium Enterprises of Cassava-Based Snacks

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Abstract

This study aims to determine the amount of income of various cassava-based snack food SMEs in Martapura District, East Ogan Komering Ulu Regency. The method used in this research is the quantitative descriptive analysis method. Sampling techniques using the saturated sample method. The data analysis technique used is income analysis. Based on the results of research and analysis that has been done, it is concluded that the income of Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency is Rp. 7.479.067/month. The income of yam chips SMEs in Martapura District, East Ogan Komering Ulu Regency is Rp. 10,521,428 /month, and the income of yam chips and kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency is Rp. 11.397.575/month.

Keywords: Income, SMEs, kelanting, cassava chips

A. Introduction

The prospect of developing agribusiness and agro-industry in East Ogan Komering Ulu Regency is still in the process of development. Programs that need to be developed are the development of superior and mainstay commodities, increasing the added value of agricultural products, developing marketing systems, providing transportation facilities and product distribution, developing partnerships and restructuring agricultural and agro-industrial systems and institutions, and providing added value to agricultural products. Added value is not measured by what has been done including all the costs that must be incurred, but from the perception of value to consumers (Yoki & Pusvita, 2021). Because added value is measured by consumer perceptions, the role of marketing including brands is important. If higher perceptions can be provided through value creation and complemented by correct marketing applications, then agro-industry will contribute more.

Agricultural development in OKU Timur Regency is directed at increasing production and farmers' income through programs to increase production per unit of land area and improve the quality and processing of crops. The existence of agricultural land area in this region will play an important role in the economy of a region. Especially for cassava, its role in the national economy continues to decline because it is considered not a priority commodity so it receives less investment support both in terms of research and development, counselling, procurement of facilities and infrastructure, as well as in regulation and services. As a result, the harvest area continues to decrease and productivity has not increased significantly (Puspapratwi & Monggesang, 2020). One of the causes is the lack of appropriate technology to increase the income of cassava farmers. This is because natural resources and human resources have not been

maximally utilized in the management of cassava-based snacks in dry land so the productivity of agricultural products is still very diverse. In addition, it is also caused by the ability of people who still vary in adjusting the patterns already owned with the available land resources.

The development of agribusiness, especially the processing of agricultural products into cassava-based snacks in Martapura District in 2023 is quite rapid. According to the Office of Small and Medium Enterprises Cooperatives of East Ogan Komering Ulu Regency in 2023, there were 20 cassava-based snack food businesses in Martapura District. Cassava-based snack food agro-industry businesses in Martapura District are generally small-scale. The manufacture of cassava-based snack food still uses traditional methods in the utilization of each stage of the process so the results achieved are not optimal, the resulting cassava-based snack food is unsatisfactory in colour, cassava-based snack food easily decreases its crispness and the rest of the production is only piled up in the form of garbage which is increasingly accumulating. With the use of technology adapted to rural conditions that are limited in capital and human resources, it is expected that there will be an additional increase in income from integrated cassava processing that pays attention to optimizing each stage of the process and utilizing by-products so that it can increase the income of farm families.

B. Methodology

Place and Time of Research

This research took place in Martapura Sub-district, OKUT Regency. The determination of this location was done intentionally (purposive sampling) with the consideration that Martapura District, OKUT Regency is a sub-district where there are many SME entrepreneurs of cassava-based snacks compared to other sub-districts in OKUT Regency. The research time is from January to February 2024.

Research Methods

The research method used in this research is the survey method. The survey method is a method used to obtain facts in the field using a questionnaire as a data collection tool from direct interviews with SMEs of cassava-based snacks in Martapura District, East Ogan Komering Ulu Regency.

Sample Withdrawal Method

The sampling method used in the study is a saturated sample method, by taking all SMEs that process cassava-based snacks in Martapura District, East Ogan Komering Ulu Regency. The population being sampled as many as 20 SMEs of cassava-based snacks in Martapura District, East Ogan Komering Ulu Regency.

Data Collection Methods

The data collected include primary data and secondary data. Primary data is taken by observation and direct interviews with respondents, while secondary data is obtained from literature books, journals and agencies related to this research (Agroindustry et al., 2022).

Metode Analisis Data

The data analysis methods used in this research are:

- a. Calculating business income from processing raw materials into cassava-based snacks with the formula:

$$IC = TR - TC$$

Description:

IC = Income from processing raw materials into cassava-based snacks (IDR/month)

TR = Revenue from processing raw materials into cassava-based snacks (IDR/month)

TC = Total cost of processing cassava into cassava-based snacks (Rp/month)

(Ayesha et al., 2020)

- b. To calculate revenue can be calculated using the following formula:

$$TR = Q \times P$$

Description:

TR = Total revenue from processing raw materials into cassava-based snacks (Rp/Bulan)

Q = Quantity of cassava-based snack food products (Pack)

P = Price of cassava-based snack food products (Rp/Kg)

- c. The total cost can be calculated using the following formula:

$$TC = TFC + TVC$$

Description:

TC = Total cost of processing raw materials into cassava-based snack food (Rp/month)

TFC = Fixed costs of processing raw materials into cassava-based snack food (Rp/Month)

TVC = Variable costs of processing raw materials into cassava-based snack food (Rp/month)

C. Findings and Discussion

Kelanting SME

a. Production Costs of Kelanting SMEs

The average cost of doing business incurred by the perpetrators of Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency in one month can be seen as follows:

Table 1. Production Costs of Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Cost	Total Production Cost	Average (IDR/Month)
1	Variable Cost	37,197,000	7,439,500
2	Fixed Cost	8,900,000	1,780,000

Source: processed primary data, 2024

Based on Table 1, it is known that the average variable costs incurred by SMEs kelanting business actors in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 7,439,500, and the average fixed costs incurred by SMEs kelanting business actors in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 1,780,000.

b. Acceptance of Kelanting SMEs

The business revenue of various SMEs of cassava-based snacks is the multiplication of the amount of production by the selling price. Farm income of various SMEs of cassava-based snacks is the difference between revenue and total costs incurred by farmers in one month of production. Acceptance of SMEs kelanting business in one month of production can be seen in:

Table 2. Acceptance of Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Variable Description	Total
1	Production (Kg/Month)	350
2	Price (Rp/Kg)	45.000
	Revenue	15,750,000

Source: processed primary data, 2024

From Table 2 it is known that the production of kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency in one month amounted to 350 kg/month, with a price of Rp 45,000 per kilogram. The average revenue of UKM kelanting in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp 15,750,000.

c. Income of Kelanting SMEs

Business revenue of SMEs kelanting in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp. 15,555,556. Business Income of various chips SMEs in Martapura District, East Ogan Komering Ulu Regency is a reduction between receipts of Rp. 15,750,000 with total production costs of Rp. 7,441,280 is Rp. 8,308,720 per month.

Cassava chips SMEs

a. Production Costs of Cassava Chips SMEs

The average cost of cultivation incurred by cassava chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month can be seen as follows:

Table 3. Production Costs of Cassava Chips SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Cost	Total Production Cost	Average (IDR/Month)
1	Variable Cost	71,337,500	10,191,071.43
2	Fixed Cost	12,500,000	1,785,71

Source: processed primary data, 2024

Based on Table 3, it is known that the average variable costs incurred by cassava chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 10,191,071.43, and the average fixed costs incurred by cassava chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 1,785.71.

b. Acceptance of Cassava Chips SMEs

Business revenue of cassava chips SMEs in one month of production can be seen in :

Table 4. Revenue of Cassava Chips SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Variable Description	Total
1	Production (Kg/Month)	517,86
2	Price (Rp/Kg)	40.000
	Revenue	20,714,285.71

Source: processed primary data, 2024

From Table 4 it is known that the production of cassava chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month amounted to 517.86 kg/month, with a price of Rp 40,000 per kilogram. The average revenue of cassava chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp 20,714,285.71.

c. Income of Cassava Chips SMEs

Cassava chips SME business revenue in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp. 20,227,273. Business Income of various chips SMEs in Martapura District, East Ogan Komering Ulu Regency is a reduction between receipts of Rp. 20,714,285.71 with a total production cost of Rp. 10,192,857.14 is Rp. 10,521,428.57 per month. This is by research (Septiadi & Nursan, 2021; Pasau et al., 2019) which states that income or profit is obtained from the difference between total revenue and total costs obtained per year.

Cassava Chips and Kelanting SMEs

a. Production Costs of Cassava Chips and Kelanting SMEs

The average cost of doing business incurred by SMEs of cassava chips and kelanting in Martapura District, East Ogan Komering Ulu Regency in one month can be seen as follows:

Table 5. Production Costs of Cassava Chips and Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Cost	Total Production Cost	Average (IDR/Month)
1	Variable Cost	84,305,000	10,538,125
2	Fixed Cost	14,400,000	1.800,000

Source: processed primary data, 2024

Based on Table 5, it is known that the average variable costs incurred by SMEs Cassava Chips and Kelanting in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 10,538,125, and the average fixed costs incurred by SMEs cassava chips in Martapura District, East Ogan Komering Ulu Regency in one month amounted to Rp. 1,800,000.

b. Acceptance of Cassava Chips and Twigs SMEs

Business revenue is the total rupiah value calculated from all products sold (Atriana et al., 2021; Tasik et al., 2021). In other words, business revenue is the result of multiplying the number of products by the price. The business revenue of SMEs kelanting and cassava chips in one month of production can be seen in Table 6.

Table 6. Revenue of Cassava Chips and Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency

No	Variable Description	Total
1	Production (Kg/Month)	539,06
2	Price (Rp/Kg)	40.625
	Revenue	22,937,500

Source: processed primary data, 2024

From Table 6 it is known that the production of Cassava Chips and Twigs SMEs in Martapura District, East Ogan Komering Ulu Regency in one month amounted to 539.06 kg/month, with a price of Rp 40,625 per kilogram. The average revenue of Cassava and Kelanting Chips SMEs in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp 21,937,500.

c. Income of Kelanting and Cassava Chips SMEs

Details of the amount of income of SMEs kelanting and cassava chips in Martapura District, East Ogan Komering Ulu Regency can be seen in Table 7.

Table 7. Business Income of Cassava Chips and Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency

Description Amount	Jumlah
a) Production (Kg)	539.06
b) Price (Rp/Kg)	40.625
c) Revenue (Rp)	21,937,500
d) Total production cost (Rp)	10,539,925
Total income (Rp/month)	11,397,575

Source: processed primary data, 2024

From Table 7, it can be seen that the revenue of cassava chips and kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency in one month of production amounted to Rp. 21,937,500. Business Income of various SMEs of cassava chips and twigs in Martapura District, East Ogan Komering Ulu Regency is a reduction between receipts of Rp. 20,227,273 with total production costs of Rp. 10,539,925 is Rp. 11,397,575 /month.

D. Conclusion

Based on the results of research and analysis that has been done, it is concluded that the income of Kelanting SMEs in Martapura District, East Ogan Komering Ulu Regency is Rp. 7,479.067 / month. Cassava chips SME income in Martapura District, East Ogan Komering Ulu Regency is Rp. 10,521,428 / month, and cassava chips SME income and kelanting in Martapura District, East Ogan Komering Ulu Regency is Rp. 11,397,575 / month.

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Risk Production Analysis Rice Farming with Just and Pope Approach

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Abstract

Rice plants are included in agricultural commodities that have a high risk. Farming risks can be caused by agroecological environmental factors, input factors and management. This study aims to (1) determine the magnitude of the production risk of rice farming; (2) Identify production factors that affect rice production risks; This research was conducted in Lampulung Village, Pammana District, Wajo Regency. The population in this study amounted to 618 people. From this population, 5% of the population was taken so that a sample of 30 people was taken. Analysis of the coefficient of variation is used to determine the magnitude of the risk and the Just and Pope model is used to identify risk factors. The results showed that (1) the risk of rice production in Lampulung Village, Pammana District, Wajo Regency was relatively large with a coefficient of variation of 0.524, meaning that for every ton of rice productivity that is expected, there is a productivity risk faced by a risk of 52.4 percent of total production which are expected; (2) The production factor that increases the risk of rice production is the seed factor. Variable land area, fertilizer, labor and pesticides are factors that can reduce or reduce the risk of rice production.

Keywords: Rice farming, productivity, risk production, just and pope

A. Introduction

Rice plays a very strategic role in household food consumption (Nurliani & Rosada, 2016). Rice is still a staple food for Indonesian people so that Indonesia is the largest rice consumer in Asia (Yuliawan & Handoko, 2016). This high demand for consumption shows insignificant results with declining rice production in 2021. BPS Indonesia data shows a decrease in production of 0.41% compared to 2020. Wajo Regency is the second largest contributing district to rice production in South Sulawesi with a production of 13.14% in 2021. This shows that the agricultural sector is still a support for people's lives in Wajo Regency.

Rice plants are included in agricultural commodities that have a high risk, are very vulnerable to breaking and include plants whose growth and harvest depend on the season and climate (Rohmah et al., 2015). In farming, the productivity expected by farmers does not always reach the optimal level of efficiency. Risk is closely related to uncertainty so the risk of farming can be minimized from the efforts made by humans (Shakya & Chauhan, 2019). One of the risk factors in farming is production risk (Astuti et al., 2019). Farming risks can be caused by agroecological environmental factors, input factors and management (Zakirin et al., 2014). Weather/climate is the factor that drives the risk the most, other factors are pests and diseases, seed quality, soil fertility and human resources (Ghozali & Wibowo, 2019). This is in line with the geographical conditions in Wajo Regency, especially in Pammana Subdistrict which is directly adjacent to Lake

Lampulung and the Welannae River which makes this area frequently experience flooding and changing planting schedules.

Farmers' efforts to increase productivity can be seen from optimizing production factors, such as labour, seeds, fertilizers, pesticides and land. Efforts to develop rice farming can be studied in more depth regarding what factors influence the risks faced by farmers and the extent to which these risks have an impact on reducing the productivity of farmer's farming results.

B. Methodology

This research was conducted in Lampulung Village, Pammana District, Wajo Regency, with the consideration that the people in the village generally make their living from agricultural products, one of which is paddy rice farmers and is one of the largest rice producers in Wajo District. In this study, the data used are primary data and secondary data. Primary data was obtained through interviews using a structured list of questions (questionnaire). The population in this study amounted to 618 people. From this population, 5% of the population was taken so a sample of 30 people was taken.

Coefficient variation analysis is an analysis used to determine the magnitude of the risk of rice production in Lampulung Village, Pammana District, and Wajo District. The formulation is as follows:

1. Variance

Variance values indicate deviations or production risks faced by rice farmers. The variance value can be written using the following formula:

$$\sigma^2 = p_1(Y_1 - \hat{Y})^2 + p_2(Y_2 - \hat{Y})^2 + p_3(Y_3 - \hat{Y})^2 \dots\dots\dots (1)$$

Explanation:

σ^2 = Variance of rice productivity

p_i = Probability of an event (farmers obtain the highest productivity, normal and lowest)

Y_i = Rice Productivity (Ton/Ha)

$\hat{Y}_i$ = Rice productivity expectations (Ton/Ha)

2. Standard Deviation

To find out the magnitude of the risks faced by rice farming actors using the Standard deviation. Mathematically it can be written as follows:

$$\sigma_i = \sqrt{\sigma^2} \dots\dots\dots (2)$$

Explanation:

σ^2 = Variance of rice productivity

σ_i = Standard deviation of rice productivity

3. Coefficient Variation

To compare the risks faced by rice production using the coefficient of variation. Mathematically the coefficient variation can be written as follows:

$$CV = \sigma_i / Y_i \dots\dots\dots (3)$$

Explanation:

CV = Coefficient Variation

σ_i = Standard deviation

Y_i = Rice Productivity expectations

The analysis of the production risk function and rice production risk function in Lampulung Village, Pammana District, Wajo Regency uses the model developed by Just and Pope. The model has accommodated the existence of risk in the production equation by including the variance of production. Sari et al., (2020) (Sari et al., 2020) argue that the production function in the Just and Pope model which uses a two-step procedure is the Cobb-Douglas production function in natural

logarithmic form. The Just and Pope production function model by including the risk element is as follows:

Production Function:

$$f(x) = \ln Y_i = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \varepsilon \dots (4)$$

Risk Production:

$$\sigma^2 Y_i = (Y_i - \hat{Y}_i)^2 \dots (5)$$

Where production risk in this study is the residual from the regression model (variance productivity) which is obtained from the difference between actual production and output production regression. Production Risk Function:

$$g(x) = \ln \sigma^2 Y_i = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \alpha_5 \ln X_5 + \varepsilon$$

Explanation:

Y = Rice production (ton)

$\hat{Y}$ = Estimated rice production (ton)

β = Parameters estimated in the production function

α = Parameters estimated in the production risk function

X1 = Land Area (Ha)

X2 = Seed (kg)

X3 = Labor (HOK)

X4 = Fertilizer (kg)

X5 = Pesticide (liter)

C. Findings and Discussion

The risk that is often faced by farmers, especially rice farmers in Lampulung Village, Pammana District, Wajo Regency is production risk where every season, it fluctuates and tends to decrease productivity produced by farmers. Fluctuating productivity is indicated by the highest, normal and lowest productivity values. The results of productivity calculations that have been received by farmers can be seen in the following table:

Table 1. The average productivity of rice produced by rice farmers in Lampulung Village, Pammana District, Wajo Regency

Variable	Average	Standard deviation
Lowest Productivity (Ton/Ha)	3,410 Ton/Ha	-
Normal Productivity (Ton/Ha)	4,822 Ton/Ha	-
Highest Productivity (Ton/Ha)	7,379 Ton/Ha	-
Lowest Odds	0,333	0,330
Normal Odds	0,400	0,305
Highest Odds	0,267	0,365
Expected Productivity	5,274	1,515

Table 1 shows that the highest productivity achieved by rice farmers in Lampulung Village, Pammana District, Wajo Regency was 7,379 tons/ha, the lowest productivity was 3,410 tons/ha, and the productivity most often produced by rice farmers in the area was 4,822 Tons/Ha. This shows that there is a large difference between rice farmers producing the highest and lowest productivity, which has implications for the erratic production results. Conditions in the field indicate that rice productivity is determined more by the variety used and the use of farming inputs by farmers. Every rice farmer will experience high, low and normal productivity conditions. This is related to several factors that can cause rice productivity to reach the highest level, namely good weather conditions, properly selected varieties, high soil fertility, and good irrigation. The measurement of the amount of risk in this research is seen from the value of the variance, standard deviation and the resulting coefficient of variation. The higher the value of the

variance and the coefficient of variation, the higher the risks faced by farmers. As for the magnitude. The risk of rice productivity in Lampulung Village, Pammana District, Wajo Regency can be identified as follows:

Table 2. The Magnitude of Rice Productivity Risk in Lampulung Village, Pammana District, Wajo Regency

Measure	Value
<i>Variance</i> (Ton/Ha) ²	10,691
<i>Std. Deviation</i> (Ton/Ha)	2,718
<i>Coefficient variation</i>	0,524

Based on Table 2, shows that the magnitude of the productivity risk faced by rice farmers in Lampulung Village, Pammana District, Wajo Regency is 0.524. This value indicates that for every ton of expected rice productivity, there is a productivity risk of 0.524 tons/ha (there is a risk of 52.4 per cent of the total expected production). The magnitude of the risk is relatively large. This is thought to be caused by several factors such as the selection of varieties used, the availability of fertilizers, the availability of water on the land, the unpredictable weather and climate, and the time of harvest.

Production Risk Function of Rice Farming

The determination of the production risk function used in this study is based on the variance value obtained from the estimation of the production function using the Just and Pope model. Where the Just and Pope model can accommodate risks in production. The behaviour of rice farmers in facing risk is traced based on the use of production factors. The variables used in estimating the production function and production risk for rice farmers are the variables of land area, seeds, labour, fertilizers and pesticides and the number of workers.

Test Assumption Classic

To provide certainty that the regression equation used has accuracy in estimation and is not biased and consistent, a Classical Assumption Test is carried out which includes tests for normality, multicollinearity and heteroscedasticity as follows.

1. Normality test.

The normality test is needed to find out whether the data we use is normally distributed or not. This normality test uses the Eviews 12.0 application through the Histogram-Normaity Test. If the data has a probability value of Jarque-Bera > Alpha 0.05, then the data is declared to be normally distributed.

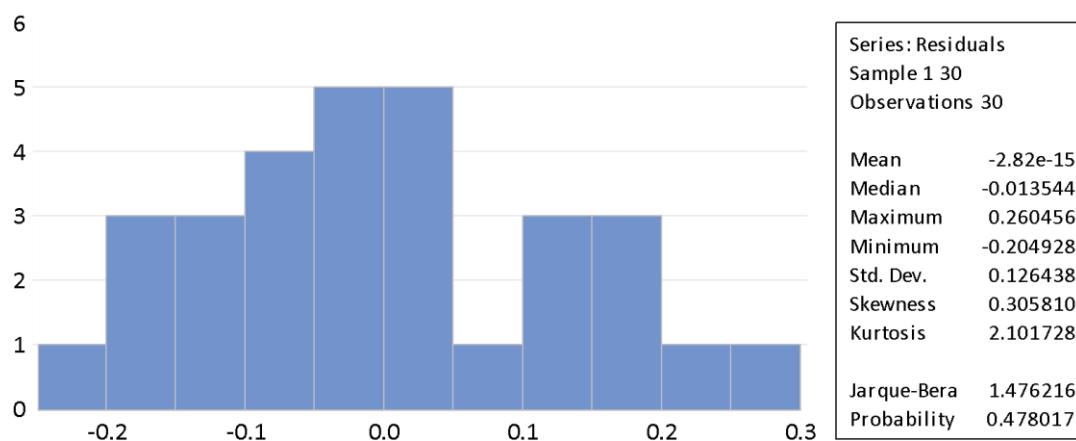


Figure 1. Normality Test Results

Figure 1 shows that the Jarque-Bera value is 1.476 with a probability of $0.478 > 0.05$ (95% confidence level), which means that the residuals are normally distributed. The results of the regression analysis show that the regression model used is good because one of the BLUE (Best Linear Unbiased Estimator) conditions is met.

2. Multicollinearity.

A multicollinearity test was conducted to find out whether the independent variables in the regression equation are not correlated with each other. To detect multicollinearity one must look at the tolerance value and the Variance Inflation Factor (VIF) value. VIF is used as a criterion for detecting multicollinearity in linear regression involving more than two independent variables (Sriningsih et al., 2015). If the VIF value is greater than 10, it can be said to have a multicollinearity problem.

Table 3. Multicollinearity Test Results

No.	Variable	Value VIF
1.	Land Area (X1)	7,566
2.	Seed (X2)	3,038
3.	Fertilizer (X3)	1,035
4.	Labor (X4)	3,351
5.	Pesticide(X5)	7,796

Table 3 shows that all variables have a VIF value of less than 10, so it can be concluded that the regression model used is good because there are no correlation problems between independent variables or multicollinearity does not occur.

3. Heteroscedasticity.

To find out whether there is the same distribution of variance in the residuals, a Heteroscedasticity Test was carried out. To find out whether there is a heteroscedasticity problem using the White Heteroscedasticity test in the Eviews12.0 program. if valueProb. Chi-squared on Obs*R-Squared is greater than alpha 0.05, so the regression model is free from heteroscedasticity problems.

Table 4. Heteroscedasticity Test Results

<i>Heteroskedasticity Test: Breusch-Pagan-Godfrey</i>			
F-statistic	2,007385	Prob. F	0,0465
Obs*R-Squared	26,09531	Prob. Chi-Square	0,1627

Table 4 shows that the Prob. Chi-squared on Obs*RSquared of 0.1627 is greater than alpha 0.05 meaning that the regression model is homoscedasticity or in other words, there is no problem with the assumption of non-heteroscedasticity so it can be concluded that the data on each independent variable in the model has a homogeneous variance.

Statistical Test

Testing the hypothesis of soybean production factors using multiple linear regression analysis by analyzing the coefficient of determination (R^2), T-test and F-test. The confidence levels used in this study were 95% and 90% ($\alpha = 5\%$, $\alpha = 10\%$).

Table 5. Function of Production Risk in Lampulung Village, Pammana District, Wajo Regency

Production Function				
Variable	coefficient	Std. Error	t-Statistic	Prob.
C	-8,281312	1.173446	-7,057255	0,0000
Ln Land Area (X ₁)	-0,982120***	0,111617	-8,799007	0,0000
Ln Seed (X ₂)	0,499524***	0,075372	6,627478	0,0000
Ln Fertilizer (X ₃)	-0,001497 ^{ns}	0,037037	-0,040379	0,9681

Ln Labor (X_4)	1,779632***	0,284789	6,248960	0,0000
Ln Pesticide (X_5)	0,174027*	0,100901	1,724720	0,0974
R-squared			0,841261	
Adjusted R-squared			0,808190	
F-Statistik			25,43831	
Prob (F-Statistik)			0,000000	
Production Risk				
Variable	coefficient	Std. Error	t-Statistic	Prob.
C	12,09012	8,814479	1,371621	0,1829
Ln Land Area (X_1)	-0,423633	0,838425	-0,505272	0,6181
Ln Seed (X_2)	1,774274***	0,566163	3,133859	0,0045
Ln Fertilizer (X_3)	-0,148518	0,278483	-0,533310	0,5987
Ln Labor (X_4)	-4,873154**	2,139222	-2,278003	0,0319
Ln Pesticide (X_5)	-0,167615	0,757932	-0,221148	0,8268
R-squared			0,416950	
Adjusted R-squared			0,295481	
F-Statistik			3,432564	
Prob (F-Statistik)			0,017617	

Description: *** = 99% Confidence Level

** = 95% Confidence Level

* = 90% Confidence Level

ns = Non-significant

1. *F-test.*

The F test is used to determine the effect of the independent variables simultaneously on the dependent variable in a significant way or not. Table 5 shows that the calculated F-values for the production function and production risk function are respectively 25.438 and 3.433 with a probability value of $\alpha = 1\%$, namely 0.000. Thus it can be concluded that the independent variables of land area, seeds, fertilizers, labour and pesticides jointly affect rice productivity.

2. *T-test.*

The t-test is used to determine the effect of each independent variable on the dependent variable. Statistical Test Results for the Production Function and Production Risk Function are detailed as follows.

a. Land Area (X_1)

The results of the estimation of the rice production equation show that the variable land area is found to have a significant effect on rice productivity at the 99% confidence level at $\alpha=1$ per cent. If farmers want to increase rice production in the region, land variables must be the main concern. Therefore, to increase rice production, land expansion is urgently needed. This is in line with what was stated (Ayu et al., 2021) that land area has a positive and significant effect on farmers' income. The narrower the land, the more inefficient farming is done. In general, it is said, that the larger the area of land (cultivated/planted), the greater the amount of production produced by that land. In a risky land function, the area hurts the risk of rice production. This means that any additional land area will reduce the production risks faced by farmers. However, land area does not affect production risk.

b. Seed (X_2)

The statistical t-test results in Table 5 show that seeds have a significant effect on rice productivity at the 99% confidence level with a p-value of 0.000 which is smaller than α , which is 0.01. The regression coefficient value is 0.499, which is positive, meaning that every 1 per cent increase in the number of seeds will increase rice productivity by 0.499 per cent with other assumptions being constant. This is by Zarliani (2020) which states that seeds have a significant effect on rice productivity, the use of superior seeds and certificates and the appropriate amount will affect rice productivity.

In the risk function, the seed production factor is a factor that can pose a risk to rice production. This is indicated by the value of the seed coefficient which is positive and has a significant effect on rice productivity, and has a positive sign. The positive effect of using seeds indicates that the quality of the seeds used by farmers is relatively good. If the quality of the seed is not good, then the addition of seed will not be followed by an increase in production, or it can even have a negative effect.

c. Fertilizer (X_3)

The statistical t-test results in Table 5 show that fertilizer has no significant effect on rice productivity. This is because, in the research area, floods often occur, so when the water recedes nutrients are stored in agricultural lands that have been submerged. The limited use of fertilizers in the study area was also a factor in the non-effect of fertilizers on rice productivity.

The effect of fertilizer on risk is negative which indicates that increasing the amount of fertilizer will reduce production risk. This means that when the use of fertilizer is increased it will also increase production yields and production risk will decrease. This is not by the results of research by Chrisdiyanti & Yuliawati (2019) which shows that the use of manure and organic manure will even increase the risk of farming. This is because the addition of fertilizer will increase the availability of nutrients in the soil, but the use of fertilizer that is above the production threshold will reduce the level of soil fertility for a certain period resulting in a decrease in production in the following years.

d. Labor (X_4)

The statistical test results in Table 5 show that labour has a significant influence on rice productivity at an error rate of 99% because the p-value of 0.000 is less than $\alpha = 0.01$. This means that rice production can be increased through the addition of labour used.

The risk factors for labour production have a negative influence on the risk of rice production. This means that an increase in the number of workers used will lead to a decrease in production risk. This is because floods often occur in this area, so farmers need workers to plant quickly and on time to avoid climate and weather changes. This is not in line with the research results of Nadapdap & Saefudin (2020) which show that additional labour will increase the risk of farming. This is because the workforce used is a workforce that is less skilled and does not understand a good plant maintenance system.

e. Pesticides (X_5)

The statistical test results in Table 5 show that pesticides have a significant effect on rice productivity at an error rate of 90% because the p-value of pesticides is 0.097 which is less than $\alpha 0.1$. Pesticides can reduce and prevent attacks by pests and diseases that damage crops and agricultural products, especially rice. This is consistent with research by Suharyanto et al., (2015) which states that the use of pesticides has a significant effect on reducing production risk. Where farmers make decisions to use pesticides as a preventive measure to reduce pest and disease attacks on plants.

The effect of pesticides on risk is negative which indicates that increasing the amount of pesticides will reduce production risk. This is not by the results of research (Apriana et al., 2017) which shows the use of pesticides can reduce the risk of rice production. Pesticide spraying is carried out when the pest population is too large, two to three times spraying according to the intensity of the attack pest.

D. Conclusion

The risk of rice production in Lampulung Village, Pammana District, Wajo Regency was relatively large with a coefficient of variation of 0.524, meaning that for every ton of rice productivity that is expected, there is a productivity risk faced by a risk of 52.4 percent of total production which are expected. The production factor that increases the risk of rice production

is the seed factor. Variable land area, fertilizer, labor and pesticides are factors that can reduce or reduce the risk of rice production.

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Market Structure of the Tofu Agroindustry

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Abstract

Tofu is an easily accessible and cheap source of vegetable protein. The tofu industry in Kota Kefamenanu District is experiencing quite rapid development. This research aims to determine the market structure of the tofu industry in Kota Kefamenanu District. The sample was determined using a saturated sampling technique of 7 tofu industrial business units in the Kefamenanu City sub-district which includes villages (Tubuhue, Sasi, South Kefa, Maubeli and Central Kefa). The data analysis method used is a qualitative descriptive method, Market Structure (Market Share, Concentration Ratio, Herfindahl Hirschman Index). Based on the research results, the market structure of the tofu industry in the Kota Kefamenanu sub-district is known to be controlled by a large market share with the highest level of market share control (MS) in UD. Sumber Hidup with a value of 23.9 %, while the lowest market share (MS) in the alpha omega industry has a value of 4.2%. Research on the concentration ratio of three companies (CR3) produces a tofu industry value of 60.6 %, so it can be seen that the value is $0.4 \leq CR3 \leq 0.8$. Meanwhile, from the results of the Herfindahl Hirschman Index calculation, a value of 1735.4 % was obtained, meaning that the IHH value ranges between 1000-2500 or $0 < IHH$, so the tofu industrial market in Kota Kefamenanu District is in the Oligopoly market type.

Keywords: Agroindustry, kefamenanu, market structur, tofu

A. Introduction

Agriculture is a *prime mover* (main driver) because the agricultural sector supports other sectors such as industry and services. One form of support is by providing raw materials for the processing industry. A form of industry that is easily found on a large and small scale is agro-industry which processes various raw materials *into* semi-finished materials and ready-to-consume products.

Agroindustry provides added value through processing processes. One agro-industry that has the potential to be developed in Kota Kefamenanu District, Kefamenanu Regency is the tofu agro-industry. The tofu agroindustry is an agroindustry that uses soybeans as raw material because the amount of soybeans imported is always available and there is also sufficient labour (Arifin, 2014). However, there are still shortcomings, including capital, expert personnel, raw materials and infrastructure. Tofu has quite high nutritional value, the same as other proteins such as meat and fish. The reason why the people of North Central Timor Regency (TTU) like to consume tofu is apart from its nutritional value, namely that the people of TTU are still classified as low income and the rate of malnutrition (*stunting*) is still high at 46.7 per cent, so tofu is one of the foods that are affordable for fulfilling nutrition. community (Tasik et al., 2020 ; BKKBN NTT Province, 2021).

Data was obtained from Kota Kefamenanu District according to the publication of BPS (Central Statistics Agency) Kab. TTU in 2018, with a total of 9 sub-districts, sub-districts (Maubeli, Sasi, Badanue, South Kefa, Benpasi, Bansone, Central Kefa, Aplasi, North Kefa). The number of small food industry businesses is 50 units, including 8 units of tofu businesses in Kefamenanu City District, namely, 1 unit in Sasi Village, 1 unit in Badanue Village, 1 unit in South Kefa Village, 2 units in Central Kefa, and 2 units in Marbella Village.

This data shows that many food processing industry businesses provide various foods made from tofu, in addition to those that sell in retail form. Tofu marketing shows promising prospects so it needs to be supported by continuous and quality tofu production (Umar Burhan et al., 2011). Tofu as a source of vegetable protein is a substitute product for animal protein from meat and fish whose price is relatively high for the residents of Kefamenanu City District, most of whom are dominated by students with middle-income levels, so tofu is a popular source of protein. The availability of a large market will result in competition, competitors also come from similar entrepreneurs around Kota Kefamenanu District. In general, the tofu-making business is a home industry and is very popular with consumers from both the upper and lower classes (Arifin, 2014). There are quite a lot of home industry entrepreneurs in Kota Kefamenanu District. The tofu industry in Kota Kefamenanu District is spread across 5 sub-districts which have 7 small tofu industry businesses. Looking at the promising market segment and the large number of consumers, the possibility of increasing the tofu industry continues to increase. This has a very positive influence, but with so much competition, the question arises of how tofu industry players create their market structure, and what factors influence the market structure of the tofu industry in Kota Kefamenanu District.

B. Methodology

The research was census-based, where all tofu industrial businesses in Kota Kefamenanu District were sampled. Primary data related to total production and marketing area. Data collection through interviews using a prepared list of questions. Secondary data was obtained through literature studies at the TTU Regency Industry and MSME Service, the Kefamenanu City District Office, and the TTU Regency BPS. Based on survey results in Kota Kefamenanu District, there are 7 tofu industrial units. For analysis purposes, the seven agro-industries were taken by census and used as respondents (Sugiyono, 2007). The census method is used to be more objective, to obtain detailed results regarding the structure of the tofu market.

Descriptive analysis is used by tabulating the interview data which is then grouped and presented as a percentage based on the number of respondents using the *Frequency analysis table*. There are several ways to observe the relationship between structure, namely market share, concentration ratio and the *Herfindahl Hirschman Index*, and also added productivity analysis (Sari et al., 2022; Hasibuan, 1993).

Industrial structure

The first approach used is *Market Share Theory*, which explains the amount of market share control a business has. This *Market Share* approach can be described using the following formula according to Arini & Sugiyanto, (2013) :

$$M.S = \frac{S_i}{S_{tot}} \times 100\% \dots\dots\dots(1)$$

Information:

- M.S : Market share of a marketing agency (%)
- S_i : the number of sales of the i-th marketing agency
- S_{tot} : total sales of all marketing agencies

2. Concentration Ratio Method

The concentration ratio *is* used to measure the proportion of the total sales in the industry based on the largest companies. The concentration ratio method used in this research is CR-3 (*concentration ratio-3*). This method according to Lipczynski and Wilson (2001) is:

$$CR_3 = \sum_{i=1}^n S_{ij} \dots\dots\dots (2)$$

Information:

CR₃: concentration ratio of 3 companies (%)

S₁: percentage of market share (%).

n: the total number of companies in the industry.

Criteria:

1. CR₃ < 0.4 means the market structure is perfect competition or monopolistic competition.
2. 0.4 ≤ CR₃ ≤ 0.8 then the market structure is oligopoly.
3. CR₃ > 0.8 means the market structure tends to be a monopoly.

-Hirschman Index

The Herfindahl - Hirschman Index is an approach that refers to the market structure that occurs in a business, the industrial concentration of a business in a market. Calculations are carried out using the formula (Sari et al., 2022)

$$HHI = \sum_{i=1}^n MS_i^2 \dots\dots\dots (3)$$

Information:

IHL : Herfindahl-Hirschman index(%)

MSi : with company market share (%)

n : the total number of companies in the industry

Criteria:

1. IHH = 1, then the market leads to a monopoly.
2. IHH < 0, then the market leads to perfect competition.
3. 0 < IHH < 0.999, then the market leads to an oligopoly.

C. Findings and Discussion

Analysis of the market structure of the Tofu Industry in Kota Kefamenanu District

Analysis of the structure of the tofu industry in Kota Kefamenanu District can be determined by looking at the market share from the sales development of each company, industry concentration, and the level of concentration ratio of the three companies (CR₃). These three factors can measure the competition between the tofu industries in Kota Kefamenanu District.

In calculating the industrial structure, first calculate the use of *market share* which can explain the amount of market share owned by the company concerned (Belangkae et al., 2014). Then from the *market share results*, the amount of market concentration is calculated using the Concentration Ratio (CR₃) formula for the 3 companies that have the largest *market share* of the 4 companies in the industry (Risma et al., 2022; Relawati & Ningsih, 2021). Finally, the *Herfindahl-Hirseman Index* (IHH) emerged due to weaknesses in the development of the concentration ratio.

Descriptive Results of Market Share Data

Table 1. Descriptive Market Share Data

No	Company name	Tofu Volume (Y)	Market share (%)
1	Alpharia	19200	15,308
2	Work partners	24000	19,135
3	Source of Life	30000	23,918
4	New life	6912	5,510
5	Timor Jaya	22080	17,604
6	Fertile Trobus	17952	14,313
7	Al f a Omega	5280	4,209
	Total	125424	100

Source: Processed Primary Data, 2021

Based on the table above, we can see that the market *share* of the 7 tofu industries in Kota Kefamenanu District is 100% in total. of the 7 tofu industries, the first largest company (MS1) is the Sumber Hidup industry with a market share of 23.918%, followed by Mitra Kerja in second place with a market share of 19.1%; Timor Jaya (17.6%), Alfaria Tempe-Tahu (15.3%), GTT Trubus Subur (14.3%), New Life (5.5%), and the last position is occupied by Alfa Omega with a market share of 4.209% (MS7).

Descriptive Results Concentration Ratio Data

Table 2. Descriptive data for calculating concentration ratios

No	Company name	Cr2
1	Work partners	19,135
2	Source of Life p	23,918
3	Timor Jaya	17,604
	Total	60,658

Source: Processed Primary Data, 2021

The concentration ratio (CR2) is the sum of the 7 tofu industries in Kota Kefamenanu District and then the 2 market shares which have a greater value than the 7 industries are taken. So it can be formulated as follows:

$$CR2 = MS1 + MS2$$

$$CR2 = 19.135\% + 23.918\% + 17.604\% \\ = 60.658\%$$

Based on the calculation of the concentration results from the largest market share value, it can be seen that the CR2 value in the tofu industry in Kota Kefamenanu District is 60.658%, therefore it can be said that the value of $0.4 \leq CR2 \leq 0.8$ is included in the oligopoly market, so the tofu industry market in Kota Kefamenanu District, it is in an oligopoly market. The results of this study are similar to the study by Anggraeni & Baladina (2017) regarding the potato marketing system in Sumberbrantas Village, Batu City.

Descriptive Results of Herfindahl Hirschman Index Data

Table 3. Herfindahl Hirschman Index Data

No	Company name	Tofu Volume (Y)	IHH
1	Al Faria	19200	0.023
2	Work partners	24000	0.036
3	Source of Life p	30000	0.057
4	New life	6912	0.003
5	Timor Jaya	22080	0.03
6	Fertile Trobus	17952	0.02
7	Alpha Omega	5280	0.001
	Total	125424	0.173

Source: Processed Primary Data, 2021

(IHH) then $0.17354 \times 10,000 = 1735.4$ The *Herfindahl-Hirschman Index* (IHH) is the sum of the squared market shares for all companies in one industrial market, which aims to determine the degree of concentration of buyers in a market area (Arifin, 2014; Purnama et al., 2017; Sari et al., 2022). Based on the calculation results from the data above, it shows that the IHH value of the tofu industry in Kota Kefamenanu District is 1735.467 %, meaning that the IHH value ranges between 1000-2500 or $0 < IHH < 0.999$, so the tofu industry market in Kota Kefamenanu District is in the market type Oligopoly.

D. Conclusion

The market structure of the tofu industry in Kota Kefamenanu District is known from the research results that the largest market share control with the highest level of market share control (MS) is in the living resources industry behind the prison, namely 23.918%, while the lowest market share control (MS) is in the industry. Alpha omega is 4.209%. Research on the Concentration Ratio of three companies (CR3) resulted in the tofu industry in Kota Kefamenanu District being 60.658%, so it can be seen that the value is $0.4 \leq CR3 \leq 0.8$ therefore the market structure of the tofu industry in Kota Kefamenanu District are in an oligopoly market. Meanwhile, from the calculation results of the *Herfindahl-Hirschman Index* of 1735.467 %, this means that the IHH value ranges between 1000-2500 or $0 < IHH$, then the tofu industrial market in Kota Kefamenanu District is in the Oligopoly market type.

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