Indonesian Journal of Social Research IJSR

Analysis of Raw Material Supply Chain Performance Assessment for Sustainable Marketing of Cassava Chips

Volume 7 Issue 2
(August 2025)
e-ISSN 2716-5191
doi: 10.30997/ijsr.v7i2.683

Himmatul Miftah[1], Agustia Rizka Ananda[1], Siti Masithoh[1], Syaima Lailatul Mubarakah[1], Ikhsan Qodri Pramartaa[1], Riny Kusumawati[1]

[1]Agribusiness Department, Faculty of Agriculture, Universitas Djuanda, Indonesia

ARTICLE INFO

Article history:
Received: 06-12-2025
Revised version received: 06-21-2025
Accepted: 08-11-2025
Available online: 08-29-2025

Keywords:
cassava; cassava chips; industry; supply chain performance.

How to Cite:
Miftah, H., Ananda, A. R., Masithoh, S., Mubarakah, S. L., Pramartaa, I. Q., & Kusumawati, R. (2025). Analysis of Raw Material Supply Chain Performance Assessment for Sustainable Marketing of Cassava Chips. *Indonesian Journal of Social Research (IJSR)*, *7*(2), 193-204. https://doi.org/10.30997/ijsr.v7i2.683

Corresponding Author:
Himmatul Miftah
himmatul.miftah@unida.ac.id

ABSTRACT

One of the obstacles to fulfilling the demand for raw materials in the cassava chips industry is the inconsistency of quantity and quality, resulting in production imbalances; therefore, raw material supply chain management is needed. This study aims to analyze the performance of the raw material supply chain in the cassava chips industry. The research method is a survey through interviews with respondents. Determination of respondents using purposive and snowball sampling methods. The number of respondents was 44 people, consisting of industry players, intermediaries, and farmers. Data analysis used descriptive and quantitative analysis with the SCOR version 12 method. The results showed that the flow of the raw material supply chain in the cassava chips industry involves farmers and intermediaries (suppliers), cassava chips industry (manufacturers), agents (distributors), shops/resellers (retailers), and end consumers (customers). The average value of supply chain performance is 78%, including the good category. The lowest performance score is in the Plan process, at 65%; the source process is at 89%; the Make 71%; the return 74%; and the highest is the Deliver at 94%. Overall, the performance value is still not optimal, so improvements are needed in indicators that are still low by planning planting patterns, arranging planting schedules, sorting and standardizing raw materials, and improving raw material peeling techniques.

1. Introduction

Cassava is a major food commodity in Indonesia, along with rice and corn (Sulaiman & Natawidjaja, 2018). According to data from PUSRI (2024), it ranked 5th in production in 2020, with 18.3 million tons produced. Its ability to adapt to different environments and abundant harvests makes cassava a basic commodity supporting food security, especially in areas with limited resources. In addition to being a food source, cassava has the potential to be a raw material in the food processing industry. One of the processed cassava products that is very popular among the community is Cassava Chips. Consumers widely favor cassava chips because they taste delicious, are practical, and are suitable as snacks between busy times (Harsita & Amam, 2019). The development and increase of the snack industry in Indonesia mark the market prospect for cassava chips. The distribution volume of Indonesian snacks in 2020 was 1,183 million kg and increased by 8% in 2021 to 1,281 million kg (Statista, 2024).

Rancabungur District, Bogor Regency, is one of Indonesia's areas with great potential in the cassava chips industry. Many people start cassava chip businesses because the area is dominated by cassava food farming. According to data, food production in Rancabungur District, Bogor Regency, comes mainly from cassava commodities, amounting to 2827 tons (BPS Kabupaten Bogor, 2020). This industry's existence can majorly contribute to employment and regional economic growth. The average output produced in the cassava chips industry in Rancabungur District is 3,456.5 kg of cassava chips/month. This production capacity is already in the high production category on average. This shows that the production input needed by each industry is increasing, especially for cassava, which is the primary raw material for production. The growing imbalance between supply and demand threatens the sustainability of the industry's supply chain (Montag & Pettau, 2022). Consistent and high-quality cassava raw materials are a challenge for some cassava chip industries, leading to frequent supply shortages. Cassava supply chain management in the industry is one factor that can influence the constraints on fulfilling cassava raw material needs. Chancharoenchai and Saraithong (2022) studied the sustainability of the cassava supply chain but did not use the SCOR perspective. Xanthavanij and Amornsawadwatana (2019) recommended using SCOR to measure supply chain performance. Therefore, based on these problems, the researcher analyzed the performance of the cassava supply chain in the industry.

The objective of this research is to identify cassava supply chain actors in the cassava chip industry and analyze their performance. This research novelty utilizes the SCOR 12 method, the latest version with 25 assessment indicators applied to the cassava chip industry.

2. Methods

The research was conducted in the cassava chips industry in Rancabungur District, Bogor Regency. The research area was determined by purposive *method* (intentionally), considering that the place has a developing cassava chips industry and relies on cassava as a food crop that is widely cultivated compared to other food crops. The research time used was in February-April 2024.

2.1. Data Sources and Types

The study collects primary and secondary data. Primary data was collected through surveys, interviews, and previously validated questionnaires. Interviews were conducted by recording answers from industry players, intermediaries, and farmers involved in the supply chain. Secondary data is obtained from existing sources such as small industry data, scientific journals, and relevant books.

2.2. Respondent Determination Method

The industrial sample was determined based on a census, taking the entire population of 6 cassava chip industries willing to participate. Then, the respondents were determined by purposive *sampling* for industry and snowball *sampling* for upstream supply chain actors. The research sample consisted of 44 people, consisting of 18 industry players, nine middlemen, and 17 farmers.

2.3. Data Processing

The data from the survey and in-depth interviews collected in recordings or temporary note papers are processed using Microsoft Word to make them easy to analyze. Meanwhile, the data from the questionnaire is processed using Microsoft Excel to make the calculation faster and more accurate. The processed data will be presented in a descriptive form and a results table.

2.4. Data Analysis Method

2.4.1. Descriptive Analysis

Descriptive analysis is used to determine the supply chain management in the cassava chips industry in Rancabungur District. The identified supply chain elements include supply chain patterns, supply chain member roles, supply chain flows, and supply chain processes. Supply chain processes are identified using the SCOR approach, which consists of planning (plan), procurement (source), production (make), delivery (deliver), and return (return).

SCOR is a performance measurement model that can explain a company's supply chain in detail through measurement indicators tailored to the company. The SCOR analysis method addresses issues related to supply chain performance. The SCOR method can analyze process components whose performance has been assessed. The model used is SCOR version 12. This method begins with determining the performance matrix, determining weights, determining the matrix achievement values, and calculating the overall supply chain performance scores according to the chain performance categories recommended by APICS (2017), Vegter et al. (2020), Trienekens & Hvolby (2000), and Anindita (2019).

2.4.2. Method Analysis SCOR

The SCOR analysis method answers problems related to supply chain performance. The model used is the SCOR version 12 model. This method starts by determining the performance matrix, determining the weight, determining the matrix achievement value, and calculating the entire supply chain performance value.

2.4.2.1. Determining Performance Matrix

The performance measurement matrix is determined by adopting a set of matrices from the Supply *Chain Council* (APICS, 2017). Not all existing indicators are used for performance measurement. This collection of matrices will be re-selected by conducting interviews with industry parties. The number of matrices and levels used is adjusted to the type, number of processes, and levels of supply chain processes applied in the company (Marimin & Maghfiroh, 2013). Temporary performance indicator keys were taken from Supply Chain Council Revision 12, comprising 26 indicators (APICS, 2017).

2.4.2.2. Determining Matrix Weights and Attributes

Weighting is done by considering the level of importance of one matrix over another, which is called a ranking *scale* (Rahayu, 2013). The industry sorts the matrix from high to low importance based on ranking. The matrix with the earliest ranking gets the largest matrix

weight compared to the ranking of other matrices, and so on. Weighting is done on the performance of level 1 and 3 matrices.

2.4.2.3. Determination of Matrix Achievement Value

The actual value and target matrix in each industry are used to determine the matrix's (NPM) achievement value, which is obtained using two calculations.

$$\text{NPM} = \frac{\text{The actual value of the matrix}}{\text{Target matrix}} \times 100\%$$

Formula (1) is used if the higher the actual value, the better the target achievement value.

$$\text{NPM} = \frac{\text{Matrix target}}{\text{Actual Value of matrix}} \times 100\%$$

Formula (2) is used if the higher the actual value, the lower the target achievement value.

The target matrix can be determined through process benchmarking, which compares current industry conditions with the conditions of the most advanced competitor industries in their fields. However, because comparative data is difficult to obtain, benchmark data can be obtained from the targets the industry wants to achieve without comparing it with other industries (Anindita, 2019).

2.4.2.4. Performance Value Calculation

Supply chain performance calculations are carried out by performing calculations in stages from level 3 to level 1. The formula for calculating performance is:

Performance Score = NPM x Weight

The results of level 3 calculations are reused for level 1 calculations, which produce the total performance of the industrial supply chain. Performance categories can be seen in the Performance Indicator Monitoring System.

Monitoring System	Performance Indicators
< 40	*Poor*
40 - 50	*Marginal*
50 - 70	*Average*
70 - 90	*Good*
>90	*Excellent*

Source: (Trienekens & Hvolby, 2000)

3. Results and Discussion

3.1. Results

Rancabungur District is at an altitude of ± 99.80-334 meters above sea level with rainfall of 3,000-3,500 mm/year and an average temperature of 24^0C–33 ^{0}C. This sub-district has a total area of 2,320 Ha with seven villages, 21 hamlets, 55 RW, and 207 RT (BPS Bogor Regency, 2021). This sub-district has much agricultural potential, ranging from rice, secondary crops, horticulture, livestock, and fisheries. Based on BPS in 2020, the type of industrial sector business in Rancabungur District is dominated by the food category industry with 354 industries (BPS Kabupaten Bogor, 2021). Of the 354 industries, eight cassava chips food industries are spread across Rancabungur, Pasir Gaok, Cimulang, and Bantarsari Villages. The average industrial production capacity is included in the high category with an

output of >1000 kg of cassava chips/month.

Table 1 Characteristics of the cassava chips industry in Rancabungur district

Industry	A	B	C	D	AND	F
Cap. Installed cassava raw material/week (Quintal)	28	10,5	10,5	70	28	56
Cassava raw material supply results/week (Quintal)	24	2	4,5	50	6	49
Workforce	5	4	5	6	6	10
Product Variants	x	v	v	v	x	v

Based on Table 1, each industry has its own results. *The supply of* cassava raw materials is still far from the installed capacity value of cassava owned. This means that the industrial capacity to produce products has not been running optimally, so it still requires a lot of cassava raw materials to optimize its capacity.

3.1.1. Respondent Characteristics

Respondent characteristic data were taken from 12 industrial actors, nine middlemen, and 17 farmers.

Table 2 Respondent characteristics

Respondent	Description	Category	%
Industry	Gender	Man	75%
Middlemen			100%
Farmer			100%
Industry	Age	36-45 years	42%
Middlemen			45%
Farmer		44-55 years	41%
Industry	School	Junior High School	42%
Middlemen			67%
Farmer		Elementary School	64%
Industry	Length of Business	1-3 years	50%
Middlemen		4-9 years	56%
Farmer		>9 years	70%
Industry	Type of Business	Main	83%
Middlemen			78%
Farmer		Side	53%

3.1.2. Analysis of cassava supply chain performance in the cassava chips industry: cassava supply chain performance indicators in the cassava chips industry

Performance measurement begins with validating temporary performance indicators from the SCOR reference that are adjusted to industry conditions.

Table 3 Cassava supply chain performance

Level 1	Level 2	Level 3
Plan	Responsiveness	Production scheduling period (JWPP)
		Product Delivery Scheduling (PPP)
	Asset	Siklus cash to cash (SCC)
Source	Reability	Raw material defects (KBB)
		Fulfillment of raw materials (PBB)
	Responsiveness	Raw material fulfillment time (WPBB)
	Agility	Supplier availability (KS)

	Cost	Order cost to supplier (BOS)
	Asset	Daily preparation (PH)
Make	Reability	Number of defective products (JPC)
	Responsiveness	Product manufacturing time (WPP)
	Agility	Adaptation in product manufacturing (APP)
	Cost	Cost of production (BPPP)
	Asset	Service life of the chip-making machine/tool (MPAK)
Deliver	Reability	Order delivered complete and on time (PKTW)
		Order delivered on schedule (PTSJ)
	Responsiveness	Order received without damage (PDTK)
		Finished product delivery time (WPPJ)
	Cost	Finished product shipping costs (BPPJ)
Return	Reability	Warranty and returns (GP)
		Customer complaint rate (TCP)
	Responsiveness	Time to replace defective product (WMP)
	Cost	Product return cost (BPP)

Source: Primary Data, 2024

Based on the interview results, some dimensions have performance indicators that are in accordance with the industrial conditions, and all dimensions in the core process are in accordance with the validated performance indicator keys. There are 23 validated indicators from the initial 26 indicators: 3 in-*plan*, six on-*source*, five on-*make*, five on-*deliver*, and four on *return*.

3.1.3. Weighting and achievement value of performance indicator matrix

Weighting is done on level 1 performance indicators of process modeling and level 3 key performance indicators. The performance achievement value is done on level 3 matrices only. Weights are determined through direct opinions, with the highest weight given to the matrix with the highest level of importance. The matrix achievement value is obtained by comparing the actual and target values of the matrix obtained from industry players filling out the questionnaire.

Table 4 The average NPM value

Level 1	Level 3	Flat^2 NPM	Level 1	Level 3	Flat^2 NPM
	JWPP	69		BPPP	82
Plan	PPP	59		MPAK	18
	SCC	62		PKTW	78
	KBB	7		PTSD	91
	UN	79	Deliver	PDTK	92
Source	WPBB	111		WPPJ	130
	KS	112		B.P.P.J.	94
	BOS	78		GP	69
	PH	115		TCP	33
	JPC	31	Return	WMP	126
Make	WPP	90		BPP	
	APP	88			98

The table shows an overview of the achievement value of the matrix that shows the performance results of each level 3 key indicator. The NPM value varies from the smallest 7% to the largest 130%. Indicators with a value of more than 100% value indicate that the indicator's performance has met the expected target or even more. Indicators below 10% indicate that the indicator is far from the target. All the results of the values and calculations

have been converted into percentages. The most significant percentage value indicates a better performance value and vice versa, based on the 2 NPM formulas researchers use when referring to Anindita's research (Anindita, 2019).

3.1.4. Calculation of the Final Value of the Industrial Cassava Supply Chain Performance

At this stage, the final value of supply chain performance is obtained by multiplying the weight and the NPM.

Table 5 Calculation of the final value of the performance of the cassava supply chain for the cassava chips industry in Rancabungur District at matrix level 3

Level 1	Level 3	Achievement Value						Weight	Score					
		A	B	C	D	AND	F		A	B	C	D	AND	F
Plan	JWPP	56	56	56	56	75	113	0,347	19,5	19,5	19,5	19,5	26,0	39,1
	PPP	53	35	53	53	71	88	0,319	16,9	11,3	16,9	16,9	22,5	28,2
	SCC	53	35	53	71	71	88	0,334	17,6	11,8	17,6	23,5	23,5	29,4
Total								**1**	**54**	**43**	**54**	**60**	**72**	**97**
Average											**63**			
Source	KBB	7	5	3	10	5	10	0,087	0,6	0,4	0,3	0,9	0,4	0,9
	UN	70	90	80	90	80	65	0,270	18,9	24,3	21,6	24,3	21,6	17,5
	WPBB	115	153	38	153	92	115	0,159	18,2	24,3	6,1	24,3	14,6	18,2
	KS	141	106	53	159	71	141	0,139	19,6	14,7	7,4	22,1	9,8	19,6
	BOS	57	57	85	79	113	79	0,151	8,5	8,5	12,8	11,9	17,1	11,9
	PH	145	109	55	164	73	145	0,194	28,3	21,2	10,6	31,8	14,1	28,3
Total								**1**	**94**	**93**	**59**	**115**	**78**	**96**
Average											**89**			
Make	JPC	10	20	100	33	5	20	0,100	1	2	10	3,3	1	2
	WPP	111	111	83	83	67	83	0,266	29,6	29,6	22,2	22,2	17,8	22,2
	APP	30	75	150	75	150	50	0,200	6	15	30	15	30	10
	BPPP	82	47	59	94	118	94	0,278	22,9	13,1	16,3	26,1	32,7	26,1
	MPAK	5	5	54	19	22	5	0,156	0,8	0,8	8,4	2,9	3,4	0,8
Total								**1**	**60**	**61**	**87**	**70**	**84**	**61**
Average											**71**			
Deliver	PKTW	70	90	80	80	60	85	0,244	17,1	22	19,6	19,6	14,7	20,8
	PTSD	62	93	93	93	103	98	0,267	16,6	24,8	24,8	24,8	27,6	26,2
	PDTK	85	90	100	95	90	90	0,267	22,7	24	26,7	25,3	24	24
	WPPJ	129	172	43	258	47	129	0,144	18,7	24,9	6,2	37,3	6,8	18,7
	BPPJ	110	23	115	92	115	110	0,078	8,5	1,8	9	7,2	9	8,5
Total								**1**	**84**	**97**	**86**	**114**	**82**	**98**
Average											**94**			
Return	GP	100	100	10	100	3	100	0,217	21,7	21,7	2,2	21,7	0,7	21,7
	TCP	13	100	40	20	4	20	0,383	5,1	38,3	15,3	7,7	1,5	7,7
	WMP	72	108	217	72	217	72	0,283	20,5	30,7	61,4	20,5	61,4	20,5
	BPP	95	100	90	100	100	100	0,117	11,1	11,7	10,5	11,7	11,7	11,7
Total								**1**	**58**	**102**	**89**	**61**	**75**	**61**
Average											**74**			

Table 6 Calculation of total final value of cassava supply chain performance of cassava chips industry on level 1 matrix

Matrix level 1	Achievement Value						Weight	Score					
	A	B	C	D	AND	F		A	B	C	D	AND	F
Plan	54	43	54	60	72	97	0,228	12,3	9,7	12,3	13,7	16,4	22
Source	94	93	58	115	78	96	0,305	28,7	28,5	17,9	35,2	23,7	29,5
Make	60	61	87	70	84	61	0,256	15,4	15,5	22,2	17,8	21,5	15,6
Deliver	84	98	86	114	82	98	0,144	12,1	14,1	12,5	16,5	11,8	14,2
Return	58	102	89	62	75	62	0,067	3,9	6,8	6	4,1	5	4,1
Total							**1**	**72**	**75**	**71**	**87**	**79**	**85**
Average										**78**			

The calculation is done on the lowest matrix level 3 and the highest matrix level 1 by multiplying the matrix achievement value by the matrix weight that has been obtained. In the calculation of the level 3 matrix, the performance results of each of its core processes are

obtained, where the industry has the lowest performance value in the process *plan* and the highest performance value in the process delivery.

3.2. Discussion

3.2.1. Description of Cassava Supply Chain in Cassava Chips Industry

3.2.1.1. Cassava Supply Chain Flow

The leading actors in the supply chain flow consist of farmers/middlemen (*supplier*s), the cassava chips industry (*manufacture*rs), an agent (*distributor*), a shop/reseller (*retailer*), and end consumers (*customers*). In the cassava chips industry in Rancabungur District, the flow is divided into groups that involve many actors in their supply chain units and those that do not. Each industry has a different flow based on production capacity.

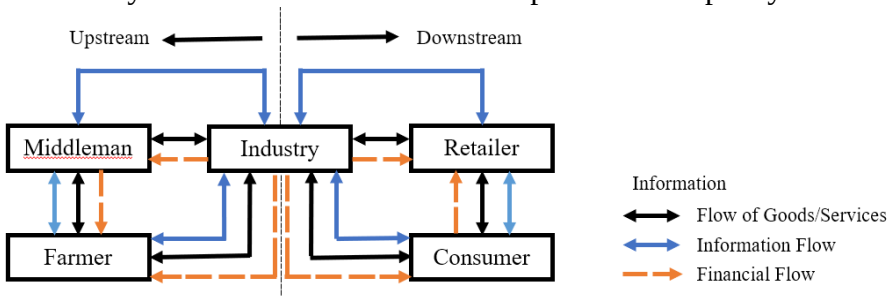

Figure 1 Cassava Supply Chain Flow in Industries A and B

This flow occurs in industries A and B, where the industry has an unstable supply source. The industry sometimes takes cassava directly from surrounding farmers and sometimes from middlemen. For farmers, cassava can be taken from 6-8 different farmers at any time. For middlemen, cassava is taken from 2-3 different middlemen at any time. The flow continues with delivery to several retailers, such as resellers/direct consumers.

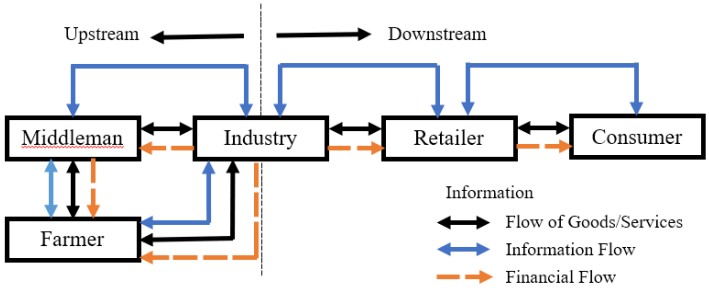

Figure 2 Cassava Supply Chain Flow in Industry C

This flow occurs in industry C, which has irregular suppliers, farmers, and sometimes middlemen. The industry wants to get cassava of good quality and at affordable prices. At any given time, this industry takes cassava from 5-6 farmers or 1-2 different middlemen. The flow continues with marketing the product to retailers in the form of shops and stalls.

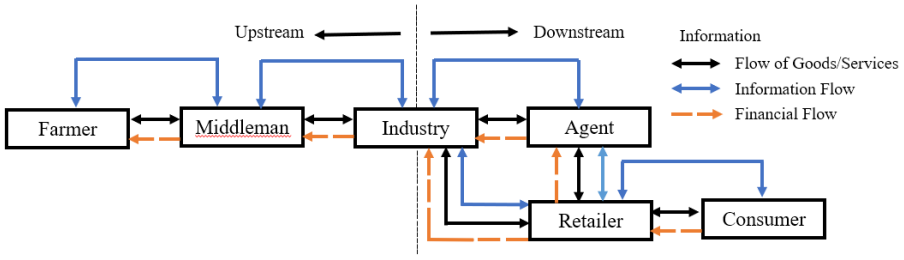

Figure 3 Cassava Supply Chain Flow in Industries D and F

This flow occurs in Industry D and F, where the industry has a fixed supplier, namely the middleman. The middleman collects cassava from various farmers, considering the quality and also the appropriate price. Each industry equally depends on the supply availability from one fixed supplier they trust. The processed cassava products are marketed to 4-5 distributor agents and 8-17 retailers in the form of shops and resellers.

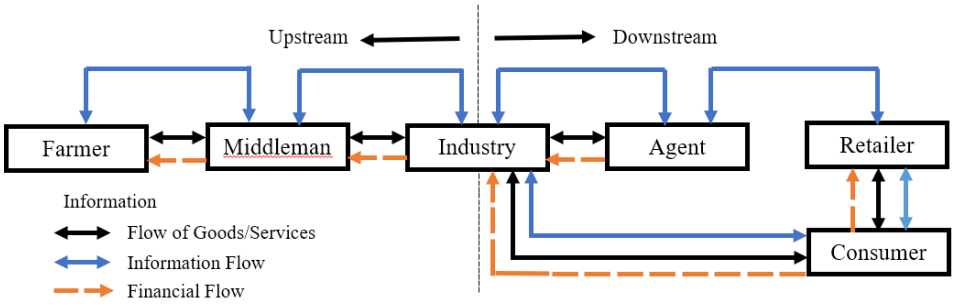

Figure 4 Cassava Supply Chain Flows in the Industry E

The source of cassava supply in industry E is the same as that in industries D and F. These industries both rely on cassava supply from 1 middleman as a permanent supplier. The difference lies in the supply chain flow from industry to downstream, where the industry sells finished products only to 7-8 agents. Some are sold directly to consumers, but this is only at certain times.

3.2.1.2. The Role of Cassava Supply Chain Members

The activities carried out by each supply chain member vary according to their role. The role of supply chain members is divided into 2, namely the role of upstream and downstream supply chain members. The role of each member of the supply chain can be seen in the following table:

Table 7 The Role of the upstream supply chain

Role	Activity
Cassava Farmers	▪ Producing cassava from cultivation ▪ Accepting cassava purchases from middlemen/industry ▪ Distributing cassava to producers (middlemen/industry)
Cassava Middleman	▪ Purchase and collection of cassava from several farmers ▪ Receiving cassava orders from the industry ▪ Distributing to industry

Upstream, the role of supply chain members is more focused on procuring and selling fresh cassava to the next supply chain member. Farmers produce cassava through cultivation, while middlemen collect it from several farmers.

Table 8 The Role of downstream supply chain

Role	Activity
Cassava Chips Industry	▪ Ordering cassava to farmers/middlemen ▪ Processing cassava into chips ▪ Sales of chip products to agents/retailers
Agent	▪ Ordering products for the industry ▪ Sales of chips to *a retailer* ▪ Product returns to the Industry
Retailer (shop[2], roadside stall[2], reseller)	▪ Purchase of cassava chips from industry/agents ▪ Sales of chip products directly to consumers ▪ Return to agent/industry
Consumer	▪ Purchase chips directly from the retailer /industry

Downstream, the role of supply chain members is more focused on procuring and selling finished products in the form of chips to the next supply chain member. Consumers only carry out the purchasing process. The processing/production process is carried out by the industry and sometimes also by agents.

3.2.2. Cassava Supply Chain Flow

3.2.2.1. Flow of Goods

The flow of goods occurs from upstream to downstream (suppliers to end consumers). The flow of goods in each industry is different, adjusting to the supply chain flow it has. Farmers' cassava is distributed the same day or one day after ordering from middlemen/industry. Goods in the form of chips from the industry are distributed to agents, retailers, or direct consumers. This flow also moves from downstream to upstream if there is *a return*. However, some industries rarely do returns because product damage is overcome by deducting payment on the next shipment.

3.2.2.2. Financial Flow

Financial flows occur upstream to downstream (end consumers to middlemen/farmer suppliers). Similar to the flow of goods, this flow follows the flow of the supply chain it has. Payments, *cash,* consignment, and exchange of bonds often occur in the downstream to industrial sectors. Payments, *cash,* routine (once a week), and initial payments (capital loans) often occur upstream.

3.2.2.3. Information Flow

The flow of information occurs from upstream to downstream or vice versa. This flow occurs by mutually receiving and providing information between related supply chains. The industry first informs suppliers of information in the form of the volume of cassava needed, the time required, and the criteria for cassava used. Suppliers also provide further information in the form of the amount of cassava that can be fulfilled, the quality of cassava available, delivery time, and the price paid. Information can also occur the other way around, namely starting from suppliers.

3.2.3. Cassava Supply Chain Process in the Cassava Chips Industry

3.2.3.1. Plan

Most of the cassava chips industry in Rancabungur District is planning for the running of its business. The planning that is often done is production planning, marketing/distribution, and cash flow. This planning is often not realized well and does not match what the industry has planned because it is constrained by capital or poor cash flow management.

3.2.3.2. Source

Some industries procure cassava by looking directly at farmers' fields, getting direct offers from farmers, or placing orders with middlemen. The quality of cassava obtained by the industry is sometimes good and sometimes not; likewise, the supply needs are sometimes met. This is caused by poor agricultural results due to weather/cultivation.

3.2.3.3. Make

The production process involves peeling, washing, shredding, frying, drying, and packaging. Some industries do washing and frying up to two times. The production quantity of each industry is determined based on *make-to-stock* and *make-to-order*. Some production processes are still not optimal, as seen in the poor quality of cassava chips.

3.2.3.4. Deliver

Some industries deliver products every two weeks, once a week, almost every day, or up to two to three times a week. Product deliveries sometimes experience late delivery/incomplete conditions due to industry errors or unexpected purchases from the surrounding community.

3.2.3.5. Return

Process *return*s between agents/*retailers* to the industry due to product damage, such as crushed/broken products that are already smelly/rancid because they have not been sold for too long. Some industries often overcome product damage by giving discounts during payment.

In the calculation of the level 1 matrix, the performance results of the total process are obtained, where the total performance value of each industry varies from the lowest performance of 71% to the highest performance of 87%. The average performance value of 78% is included in the category *Good* with a value indicator between 70 - 90 (Trienekens & Hvolby, 2000). These results are similar to the research conducted by Sriwana et al. (2021) on Supply Chain Performance Measurement with SCOR at Ud. Ananda's performance was 71.43% in the good category.

While industry performance is in the good category, the industry needs to continue improving low indicators to improve its supply chain performance to the Excellent category and achieve stability and optimization. If performance indicators are approaching but not yet reaching the target, the industry needs to monitor performance and consistently implement periodic system improvement measures (Sriwana et al., 2021). The performance value produced by this industry is still quite far from the category *excellent,* with a difference of 12%. Therefore, improvements are needed in performance indicators that are still low. Performance indicators that require improvement are 13 indicators out of 23 performance indicators, including JWPP, PPP, SCC, KBB, PBB, BOS, JPC, APP, BPPP, MPAK, PKTW, GP, and TCP.

4. Conclusion

The cassava supply chain flow in the cassava chips industry in Rancabungur District consists of a chain flow that involves many supply chain actors and those that do not. Complete supply chain members comprise farmers/middlemen, the cassava chips industry, agents, shops/resellers, and end consumers. Activities in the supply chain are carried out according to their respective roles by implementing the flow of goods, information, and finance. In the core process of the supply chain, several activities still do not meet expectations. The performance of the cassava supply chain in the cassava chips industry in Rancabungur District is included in the category *Good* with a performance value of 78%. This performance value is not yet optimal, so it requires improvement and repair of low indicators to reach *excellen*ce. 13 performance indicators require improvement. The cassava chips industry in Rancabungur District should continue to improve supply chain performance by improving low performance indicators and continuously monitoring performance to provide smooth business operations while maintaining and developing the business.

References

Anindita, A. (2019). *Analisis Kinerja Rantai Pasok PT X dengan Metode Supply Chain Operations Reference (SCOR)* [IPB University]. https://repository.ipb.ac.id/handle/123456789/98280

APICS. (2017). Supply Chain Operations Reference Model SCOR -Intro to V12. In *apics.org*.

BPS Kabupaten Bogor. (2020). *Produktivitas Palawija Menurut Kecamatan*. https://bogorkab.bps.go.id/id/statistics-table/2/MTM0IzI=/produktivitas-palawija-menurut-kecamatan.html

BPS Kabupaten Bogor. (2021). *Kecamatan Ranca Bungur Dalam Angka 2021*. https://bogorkab.bps.go.id/id/publication/2021/09/24/e791372d99d49ffa23d06ce6/kecamatan-ranca-bungur-dalam-angka-2021.html

Chancharoenchai, K., & Saraithong, W. (2022). Sustainable Development of Cassava Value Chain through the Promotion of Locally Sourced Chips. *Sustainability*, *14*(21). https://doi.org/14521. https://doi.org/10.3390/su142114521

Harsita, P. A., & Amam, A. (2019). Analisis sikap konsumen terhadap atribut produk olahan singkong. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian; Vol 3, No 1 (2019): Mei 2019DO - 10.14710/Agrisocionomics.V3i1.2469*. https://ejournal2.undip.ac.id/index.php/agrisocionomics/article/view/2469

Marimin, M., & Maghfiroh, N. (2013). *Aplikasi Teknik Pengambilan Keputusan Dalam Manajemen Rantai Pasok*. IPB Press.

Montag, L., & Pettau, T. (2022). Process performance measurement framework for circular supply chain: An updated SCOR perspective. *Circular Economy*, *1*(1), 1–12. https://doi.org/10.55845/kaiz3670

PUSRI. (2024). *PUPUK INDONESIA SAMBUT POSITIF USULAN SINGKONG SEBAGAI KOMODITAS PENERIMA SUBSIDI*. https://pusri.co.id/id/news/detail/pupuk-indonesia-sambut-positif-usulan-singkong-sebagai-komoditas-penerima-subsidi

Rahayu, M. (2013). *Dinamika Strategik Wirausahawan Tongwha*. UB Press.

Sriwana, I. K., Hijrah S, N., Suwandi, A., & Rasjidin, R. (2021). Pengukuran Kinerja Rantai Pasok Menggunakan Supply Chain Operations Reference (Scor) Di Ud. Ananda. *JISI: Jurnal Integrasi Sistem Industri*, *8*(2), 13. https://doi.org/10.24853/jisi.8.2.13-24

Statista. (2024). *Makanan Ringan - Indonesia*. https://www.statista.com/outlook/cmo/food/confectionery-snacks/snack-food/indonesia

Sulaiman, & Natawidjaja, R. S. (2018). Analisis Nilai Tambah Agroindustri Keripik Singkong (Studi Kasus Sentra Produksi Keripik Singkong Pedas di Kelurahan Setiamanah, Kecamatan Cimahi Tengah, Kota Cimahi). *Jurnal Ilmiah Mahasiswa AGROINFO GALUH*, *16*(2), 973–986. https://doi.org/http://dx.doi.org/10.25157/jimag.v5i1.1445

Trienekens, J. H., & Hvolby, H. H. (2000). Performance measurement and improvement in supply chains. In F. Gertsen (Ed.), *3rd (Euro)CINet Conference CI2000 From Improvement to Innovation* (pp. 399–409).

Vegter, D., van Hillegersberg, J., & Olthaar, M. (2020). Supply chains in circular business models: processes and performance objectives. *Resources, Conservation and Recycling*, *162*, 105046. https://doi.org/https://doi.org/10.1016/j.resconrec.2020.105046

Xanthavanij, A., & Amornsawadwatana, S. (2019). A review of cassava supply chain performance improvement: A case of cassava supply chain in Thailand. *International Journal of Supply Chain Management*, *8*(4), 6–15.