

EVALUATION OF SUPPLY CHAIN MANAGEMENT IN EFFORTS TO ACHIEVE SDG TARGET 9.C "Improving access to information and communication technology" (Case Study: Physical Products of IM3 in Unaaha District, Konawe Regency, Southeast Sulawesi)

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ABSTRACT

In supporting the achievement of the Sustainable Development Goals (SDGs) 2030, the Indonesian government integrated them into legislation to serve as a reference for all policy stakeholders in decision-making. One of the legislative regulations is Presidential Regulation No. 131 of 2015 concerning "Underdeveloped Areas" due to their complex issues ranging from economic problems to accessibility. The SDGs agenda that contributes the most in underdeveloped areas is SDG 9 "Industry, Innovation, and Infrastructure." One of its components is the telecommunications sector, which is considered a primary supporter of Gross Domestic Product (GDP). After network infrastructure is built, the next step is to evaluate the performance of business processes in telecommunications operators. The goal is to improve network performance scores and provide mobile users with better network quality. The object of this research is a telecommunications operator, Indosat Ooredoo Hutchison, which, after a merger in early 2021, massively built network infrastructure in Indonesia, particularly in the eastern region. The evaluation of business process performance in this research focuses on its supply chain process using the Supply Chain Operations Reference (SCOR) 14 framework, which was validated beforehand by internal expertise and weighted using Analytical Hierarchy Process (AHP).

KEYWORDS: SDG 9, Telecommunications, Supply Chain Management, Supply Chain Operation Reference (SCOR), and Analytical Hierarchy Process (AHP).

1. INTRODUCTION

The SDGs (Sustainable Development Goals) embraced the theme "Transforming Our World: The 2030 Agenda for Sustainable Development", containing 17 Goals which constitute a global action plan for the next 15 years, applicable from 2015 to 2030, aimed at eradicating poverty economically, reducing social disparities, and protecting environmental sustainability. SDGs are also said to have been introduced to replace and improve upon the Millennium Development Goals (MDGs) program, which ended in 2015 and only consisted of 8 targets. Naturally, there was much elaboration and addition of relevant and comprehensive Goals to better address the future challenges of the world until 2030. Among these new Goals are those from the industrial sector. Because in reality, sustainable investment in infrastructure and industrial innovation is a crucial driver of economic growth and development.

Technological progress is also key to finding long-term solutions to economic and environmental challenges, such as providing new job opportunities and promoting energy efficiency. More than 4 billion people worldwide still lack access to the Internet, and 90% of them are in developing countries. The information and communication sector is a supporting sector of GDP with a higher growth rate compared to other sectors (Ministry of Communication and Information, 2020). The development of Information and Communication Technology (ICT) nationally is represented, among others, through the Mobile Connectivity Index (MCI) report issued by GSMA (Global System for Mobile Communication Association) (Ministry of Communication and Information, 2020). Looking at the MCI, Indonesia has shown significant growth, where Indonesia is one of the 10 countries experiencing exponential growth from a score of 65.11 (2019) to a score of 69.04 (2021).

The rapid increase in the number of people accessing the internet is inseparable from the expanding coverage of signals and cellular networks in Indonesia. Based on data from the Village Potential Survey (Directorate of Financial Statistics, 2020), in 2020, 78,333 villages/settlements (93.21%) out of a total of 84,039 villages/settlements could receive cellular signals. This is consistent with the MCI score, where the 'Network Coverage' sub-parameter (network coverage based on population) scored 86.7. However, on the other hand, the extent of signal coverage and networks does not align with the 'Network Performance' score (service quality seen from download and upload speed), which only scored 65. Low 'Mobile Tariff' (monthly cellular subscriber tariffs), scored 75.1, could possibly impact the 'Network Performance' figure. The costs incurred by telecommunication operators for maintaining BTS (Base Transceiver Station) could be higher than the revenue generated because the service tariffs provided are not high. There is a need for evaluation of business processes in telecommunication operators to improve network performance scores and provide mobile users with better network quality.

One of the priority developments of the government currently is the development of underdeveloped regions. Presidential Regulation of the Republic of Indonesia Number 131 of 2015 concerning the Determination of Underdeveloped Regions designates 122 Districts in 24 Provinces as Underdeveloped Regions with criteria: (1) Community economy; (2) Human Resources; (3) Facilities and infrastructure; (4) Regional financial capability; (5) Accessibility; and (6) Regional characteristics. Konawe district was formally established based on Law No. 29 of 1959 concerning the Formation of Level II Regions in Southeast Sulawesi. At its inception, Konawe district was named the Level II Kendari Region. Then on September 28, 2004, the Level II Kendari Region was renamed Konawe District, with the district capital in Unaaha sub-district and has 29 sub-districts, based on Government Regulation Number 26 of 2004 concerning Name Changes. Konawe district covers an area of approximately 5,858.33 km², with a population of (latest data as of June 30, 2022) 260,765 people, with the number of Labor Force (above 15 years old) in Konawe district in 2021 amounting to 126,113 people, with 79,047 male and 47,066 female populations, and 64.54% are employed. In terms of the highest education completed, the Working Population in Konawe district mostly have a high school education background (completed SMA/SMK or equivalent), accounting for about 33% and Higher Education (Diploma / University) about 17% (Central Statistics Agency of Konawe District, 2022).

Based on the 2021 National Socio-Economic Survey (Susenas) data, the percentage of the population aged 5 years and above in Konawe district who own a mobile phone/wireless device is recorded at 66.34% of the total population of Konawe district. The ownership of mobile phones is one of the indicators to see to what extent the population of Konawe district interacts with the virtual world because 99.91% of their internet access uses mobile phones, while the remaining 9% uses other devices such as computers, laptops, and others. The use of mobile phones is also closely related to the telecommunication network in the area. Konawe district, with an area of approximately 5,858.33 km² and a productive population of 126,113 people, is served by 3 telecommunication operators: Telkomsel, Indosat Ooredoo Hutchison, and XL Axiata. Telkomsel has 64 BTS (Base Transceiver Station) in 25 sub-districts, XL Axiata has 36 BTS spread across 16 sub-districts, and Indosat Ooredoo Hutchison has 57 BTS spread across 21 sub-districts (data provided by Tower Lease Partner - Mitratel, TBG, CMI, and Protelindo - Southeast Sulawesi). Each telecommunication operator has a different market share, with the largest market share currently owned by Telkomsel with a share percentage of 75.51% of the industry. This is inseparable from the number of Telkomsel BTS ownership and the broader coverage area compared to the other 2 operators.

Problem Statement

Following the business merger, Indosat Ooredoo Hutchison committed to developing the Eastern Indonesia Region by increasing the number of BTS (Base Transceiver Stations) and strengthening the quality of network services. This is in line with Ministerial Decision (Kepmen) Number 7 of 2022 concerning the 'Approval of the Merger of Telecommunication Operators PT Indosat Tbk and PT Hutchison 3 Indonesia'. The decision requires Indosat Ooredoo Hutchison, as the result of the business merger, to expand the coverage area served by at least 7,660 new villages and urban areas by 2025. Currently, in Konawe district, Indosat Ooredoo Hutchison serves 33,343 customers in 21 sub-districts, consisting of 14,430 customers from the IM3 brand and 18,913 customers from the Tri brand.

With the large number of existing BTS and their distribution locations, the current challenge for Indosat Ooredoo Hutchison is how to distribute SIM cards for both IM3 and Tri brands to the surrounding community. To keep the discussion focused, the evaluation of distribution will only concentrate on the IM3 brand, the brand with the highest number of customers from Indosat Ooredoo Hutchison in Konawe district. The selected sub-district for the research is Unaaha sub-district, chosen because it has the highest number of MSMEs (Micro, Small, and Medium Enterprises) in Konawe district, thus it is expected that this research can have an impact on MSMEs in that area.

This research is conducted with the aim of identifying the indicators to assess the effectiveness of IM3 SIM card distribution and determining the extent of the effectiveness value of IM3 SIM card distribution in Unaaha sub-district, Konawe district. This research is expected to provide benefits directly or indirectly to the involved and interested parties. The theoretical benefit of this research is expected to provide knowledge for the author and readers regarding the concept of distribution in the telecommunications field to achieve the Sustainable Development Goal (SDGs) 2030 using the Supply Chain Operations Reference (SCOR) method. Additionally, this research is expected to be useful as additional information and reference for similar research in the future and practically can provide an overview of mobile SIM card distribution to be used as a reference and input for all telecommunications operator policy stakeholders at the smallest level to evaluate their business activities not only based on economic value alone but also social value.

2. LITERATURE REVIEW

As a foundation in the research presented through theories and previous research results related to supporting variables that can support this research.

2.1. Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) were a global action plan agreed upon by world leaders, including Indonesia, to end poverty, reduce inequality, and protect the environment. SDGs represent a shared global vision that represents the interests of all parties. Additionally, the countries present at the UN Sustainable Development Summit agreed that SDGs are a collective journey until 2030 and promised that no country would be left behind.

2.2. Concept of Effectiveness

The word "effective" originates from the English term "effective," meaning successful or something done successfully. Meanwhile, the Indonesian Big Dictionary defines effectiveness as the accuracy of use, utility, or supporting goals. Quoting the opinion of Harrington Emerson as cited in the book "Introduction to the Study of Administration and Management," it states that "Effectiveness is a measurement in the sense of achieving predetermined goals." Emerson then adds that this measurement means achieving targets or goals that have been predetermined. In the book "Theory of Effectiveness in Employee Performance," it explains that "Effectiveness is a measure that indicates the extent to which targets (quantity, quality, and time) have been achieved. Where the greater the percentage of targets achieved, the higher the effectiveness." From several opinions above regarding effectiveness, it can be concluded that effectiveness is a measure that indicates the extent to which targets (quantity, quality, and time) set by management have been achieved, where these targets have been predetermined.

2.3. Supply Chain Management (SCM)

The term Supply Chain Management (SCM) is always associated with the term Supply Chain (SC). The term Supply Chain has been used since the 1970s, as used by Banbury (1975) in his article entitled "Distribution – The final link in the electricity – Supply Chain," which discusses the supply chain of electricity flow to end consumers. Meanwhile, the term Supply Chain Management itself emerged in the early 1980s proposed by Oliver and Weber. The Supply Chain is a network consisting of several parties that supply raw materials, assemble, produce products, and distribute them through one or many distributors to end customers. Supply Chain Management (SCM) according to J. A. O'Brien (2006) is a cross-functional inter-company system that uses information technology to help support and manage various relationships between several key business processes of the company and with suppliers, customers, and business partners. The goal of Supply Chain Management is to design the Supply Chain and synchronize the main processes of suppliers, companies, and customers, so that there can be alignment between the flow of services, materials, and information, with customer demand.

2.4. Supply Chain Operation Reference (SCOR)

To create an effective supply chain performance, a measurement system is needed to evaluate supply chain performance. Work measurement systems are needed for monitoring and control, communicating organizational goals to functions within the supply chain, knowing where an organization stands relative to competitors and in terms of achieving corporate goals, and determining directions for improvement in creating competitive advantages.

There are many methods for measuring supply chain performance, including: Balance Scorecard, The Logistic Scoreboard, Activity Base Costing, Economic Value Added, and Supply Chain Operation Reference (SCOR). In this study, the SCOR method is used because its theoretical framework continues to evolve with the times. The Supply Chain Operations Reference (SCOR) is a model or method of processes in the supply chain pioneered by the Supply Chain Council in 1996 (Bolstorff & Rosenbaum, 2011). In 2014, the Supply Chain Council merged

with APICS (American Production and Inventory Control Society) and renamed the combined organization ASCM (Association for Supply Chain Management).

The SCOR model itself began in 1996 and has been periodically updated to adapt to changes in supply chain business practices. In 2022, SCOR version 14 was introduced to the public. SCOR 14 model defines the supply chain into several complex and tabulated components consisting of 6 main processes, namely: planning, ordering, sourcing, transformation, fulfillment, and return. (Association for Supply Chain Management. (2022).

2.5. Key Performance Indicator (KPI)

Key Performance Indicator (KPI) was a measuring tool used to determine the degree of success of an organization in achieving its goals. Measurements could be financial and non-financial and could be used to measure the performance of organizational strategies. As a tool for measuring the performance of company strategies, KPIs identified the health and development of the organization, the success of activities, programs, or service delivery to achieve organizational targets or goals.

2.6. Analytical Hierarchy Process (AHP)

According to Taylor (2014), AHP was a method for ranking decision alternatives and selecting the best one with multiple criteria. AHP developed a numerical value to rank each decision alternative, based on how well each alternative met the decision-maker's criteria. AHP was performed by decomposing complex multi-factor or multi-criteria into a hierarchy. In the AHP model, if the data processing was qualitative, then the weighting equalization could be done using pairwise comparison (Saaty, 2008).

3. METHODOLOGY

This research employed a sequential mixed methods strategy. The first stage of the research involved analyzing interview results with experts, followed by quantitative data collection through questionnaire distribution. Based on the researcher's involvement, this research was conducted without any data intervention because the data used were primary data obtained directly from PT Indosat Tbk as the organization or company (the unit of analysis for this research) and secondary data obtained by distributing questionnaires to retailers selling mobile products and IM3 product customers in the Unaaha sub-district, Konawe district. The researcher only used it to understand the effectiveness of IM3 product distribution in the Unaaha sub-district, Konawe district.

The research timeline was cross-sectional, as data collection was conducted in a single period, possibly during a day, week, or month, to answer several research questions distributed to the sample target and did not involve additional data collection to observe long-term conditions. The population in this research included both internal and external stakeholders of Indosat Ooredoo Hutchison. Purposive sampling was used in this research by distributing questionnaires to internal and external parties. Internal parties involved in the supply chain process in the Konawe district, Unaaha sub-district, were: 1 AVP - Head of Branch Kendari, 1 Rural Sales Executive, 1 Branch Manager PT Mitra Distribusi Mandiri, 1 Supervisor Sales Kendari, and 2 Sales in the Unaaha sub-district. External parties involved were 98 pulsa (outlet) retailers in the Unaaha sub-district as respondents. Data collection was carried out through questionnaire interviews with the selected samples. Data analysis conducted in this research was descriptive analysis.

4. RESEARCH RESULTS

In this chapter, the research results will be outlined to answer 2 (two) research questions: Indicators to assess the effectiveness of IM3 prepaid card distribution and the effectiveness value of IM3 prepaid card distribution in the Unaaha sub-district, Konawe district. To answer the first question, interviews were conducted with informants to obtain validated SCOR 14 performance indicators that are in line with the supply chain processes at PT Indosat Tbk, specifically at the operational level. Subsequently, questionnaires were distributed to assess the effectiveness of IM3 prepaid card distribution in the Unaaha sub-district, Konawe district.

4.1. Qualitative with Interviews

Interviews were conducted to validate the SCOR 14 performance indicators using 20 indicators as operational variables. These interviews were conducted with 2 (two) internal informants who have experience in distribution and sales at PT Indosat Tbk and currently hold positions in these fields, namely Vice President Head of Regional Distribution: Pramuji (P) and Vice President Head of Sales: Herman Usman (HU).

20 (twenty) performance indicators were presented to the informants with descriptions at each level. Using a triangulation test approach, it can be concluded that 12 (twelve) performance indicators are 'Valid' while the remaining 8 (eight) are 'Not Valid'. The understanding of 'Valid' in the table below is that the informants provided statements with similar or complementary content.

Table 1
Validation of Supply Chain Performance Indicators

No.	Performance Indicators (Code)	Interviewee 1 (P)	Interviewee 1 (HU)	Conclusion	Validity
1	Perfect Order Fulfillment (RL 1)	Sales from distributors are responsible for the distribution process to outlets.	PT Indosat Tbk always ensured that goods arrived at customers through distributors and outlets via systematic and structural approaches.	Speaker 1 completed Speaker 2's statement by mentioning who was responsible for it.	Valid
2	Perfect Supplier Order (RL 2)	-	-	There were no statements regarding the supplier from both Speakers.	Invalid
3	Perfect Return Order Fulfillment (RL 3)	PT Indosat Tbk guarantees goods purchased by outlets and accommodates a return system if the goods cannot be used by customers.	-	Speaker 1's statement was used as a basis even though there were no statements from Speaker 2.	Valid
4	Order Fulfillment Cycle Time (RS 1)	The standard for PT Indosat Tbk is that one salesperson has between 50-80 outlets that must be visited at least once a week, maximum 12 times in one month.	-	Both Speakers made similar statements.	Valid
5	Supply Chain Agility (AG 1)	At any time, needs are ready to be served even if outlets are not visited on that day.	When there is a greater market demand than estimated and the stock is insufficient, outlets through distributors are allowed to request additional allocations.	Speaker 2 completed Speaker 1's statement by mentioning the largest cost example in distribution.	Valid
6	Total Supply Chain Management Cost (CO 1)	Distribution costs are higher than marketing costs.	One of the challenges in the supply chain is the readiness of distribution infrastructure in the area, one of which is marketing and service depots.	There were no statements regarding the cost of goods sold from both Speakers.	Valid
7	Cost of Goods Sold (CO 2)	-	-	There were no statements regarding EBIT from both Speakers.	Invalid
8	EBIT (Earning Before Interest and	-	-	There were no statements regarding taxation from both Speakers.	Invalid

No.	Performance Indicators (Code)	Interviewee 1 (P)	Interviewee 1 (HU)	Conclusion	Validity
	Taxes) as Percent of Revenue (PR 1)				
9	Effective Tax Rate (PR 2)	-	-	Speaker 1 completed Speaker 2's statement by mentioning the period for physical goods allocation.	Invalid
10	Cash to Cash Cycle Time (AM 1)	The allocation plan for physical goods to distributors is done every month.	Sales targets are determined by a top-down method from HQ (Headquarter), with the mechanism of providing mandatory allocations to distributors.	Speaker 1 completed Speaker 2's statement.	Valid
11	Return on Fixed Assets (AM 2)	The telecommunications company's investment is in BTS or Sites. At every site, there must be an outlet to get closer to customers so that customers or potential customers can easily access our products.	The key to entering the mobile service is by using its products. The marketing method is to distribute products to remote areas where there is signal coverage.	Human resources and site are not included in working capital.	Valid
12	Return on Working Capital (AM 3)	Assets owned by Indosat in each region are Sites and Human Resources (HR).	-	Speaker 1's statement was used as a basis even though there were no statements from Speaker 2.	Invalid
13	Material Used (EV 1)	The packaging of physical goods (Starterpack/vouchers) is currently smaller with easily recyclable paper material. We have developed eSIMs to reduce the production of physical goods.	-	There were no statements regarding taxation from both Speakers.	Valid
14	Energy Consumed (EV 2)	-	-	Speaker 2 added to Speaker 1's statement.	Invalid
15	Water Consumed (EV 3)	-	-	There were no statements regarding taxation from both Speakers.	Invalid
16	GHG Emissions (EV 4)	Reducing environmental impact due to emissions by increasing partnerships in distribution.	During the recruitment process for sales positions, it is required to have a motorcycle that is	Speaker 1 completed Speaker 2's statement.	Valid

No.	Performance Indicators (Code)	Interviewee 1 (P)	Interviewee 1 (HU)	Conclusion	Validity
			no more than 5 years old.		
17	Waste Generation (EV 5)	-	-	Speaker 2 completed Speaker 1's statement.	Invalid
18	Diversity and Inclusion (SC 1)	In line with the company's tagline conveyed by the CEO of PT Indosat Tbk, Mr. Vikram Sinha, that the big purpose of Indosat is Empowering Indonesia, empowering all Indonesian people. PT Indosat Tbk not only facilitates telecommunications from the western tip of Sabang to Merauke, but we also create opportunities to join, to create, or to work with Indosat in all regions of Indonesia, even in remote areas.	Boosting the morale of people working in the supply chain is first by building a good culture within it.	Speaker 1 completed Speaker 2's statement.	Valid
19	Wage Level (SC 2)	The highest regional UMK is taken as the standard, both men and women are equal. Maybe what is usually distinguished is their roles.	The application of compensation to workers varies according to achievements to foster a competitive spirit among them.	Speaker 1 completed Speaker 2's statement by mentioning who was responsible for it.	Valid
20	Training (SC 3)	Indosat ensures that the sales team assigned to supervise partners in each region is rigorously selected. They have standard knowledge and skills set. Then, before going into the field, the sales team is equipped with fairly intensive coaching training.	PT Indosat Tbk's commitment is to improve the quality of human resources working within it, including human resources from distributors.	There were no statements regarding the supplier from both Speakers.	Valid

Source: Reprocessed Primary Data

After meticulously matching the interview results and comprehensively triangulating them against the input from the 2 (two) key informants in this research, it can be concluded that 12 (twelve) supply chain performance indicators are suitable for PT Indosat Tbk along with its 40 (forty) sub-indicators, as follows:

Table 2
Sub-Indicators of Supply Chain Performance

No.	Performance Indicators (Code)	Sub-Indicators (Code)	Interview Excerpts (Speaker Code)
1	Perfect Order Fulfillment (RL1)	Percentage of Orders Delivered in Full to the Customer (RL 1.1)	"The target (allocation of physical products) cascades down to sales and to each outlet" (P)

No.	Performance Indicators (Code)	Sub-Indicators (Code)	Interview Excerpts (Speaker Code)
		Delivery Performance to Original Customer Commit Date (RL 1.2)	"Then, the distance and location determine the cost and also the delivery time. While competing, the time to market is crucial. That's the main thing, the speed of delivering to the market" (P)
		Customer Order Perfect Condition (RL 1.4)	"Relatively, there are rarely defects in starter packs" (P)
		Delivery Item Accuracy to the Customer (RL 1.5)	"The outlet has options, there are prime products, or the aforementioned starter packs which are original, for example starting from 3 gigs, 9 gigs then 11 gigs and there's also 20 gigs, but there are also starter packs that are zero-based, no credit included, no packages, which can be injected by each outlet partner as per customer needs" (P)
		Delivery Quantity Accuracy to the customer (RL 1.6)	"OJA, On the Job Audit, is to evaluate whether our colleagues have followed the standard visit procedures to each store. In terms of distribution, both the quantity of goods, arrangement, and education" (P)
		Customer Order Payment Documentation Accuracy (RL 1.11)	"For example, if an outlet needs additional products outside the scheduled visit, there are two ways; they can call the salesperson, whom they are already familiar with, then the product can be delivered, or picked up by the salesperson. It can be done by phone, then transferred, sent later, or topped up with the needed credit." (P)
2	Perfect Return Order Fulfillment (RL 3)	On Time, In Full (Correct Product) (RL 3.1)	"So, it can be conveyed through their salesperson to be communicated to the internal Indosat team for checking, for example, if there are such defects" (P)
		Warranty and Returns (RL 3.4)	"If there is no return system, then this is not a purchase, it's like buying a cat in a sack, there's no guarantee" (P)
3	Order Fulfillment Cycle Time (RS 1)	Order Cycle Time (RS 1.1)	"So, the previous visit was more for control, to ensure that each of our partners is taken care of by our sales team, whether the visit is requested or not" (P)
		Fulfill Cycle Time (RS 1.4)	"There are also some outlets that are quite busy, with a lot of customers but limited capital, so they shop maybe twice a week, or what we call F8" (P)
		Route Shipments Cycle Time (RS 1.31)	"Regular visits are scheduled, whether requested or not. If it's according to the schedule, our salespeople must visit the outlet" (P)
		Select Carriers and Rate Shipments Cycle Time (RS 1.33)	"There are even (outlets) like F12 which are visited 3 times a week, because they are so busy yet their capital is limited, so our salespeople have to visit that store or outlet three times a week" (P)
		Assess Delivery Performance Cycle Time (RS 1.35)	"One salesperson should cover between 50-80 outlets that must be visited at least once a week" (P)
		Assess Supplier Performance Cycle Time (RS 1.36)	"The existing goods are released to the distributor, then the distributor is entrusted to distribute the goods to the stores in their assigned area, having its own cluster." (HU)
4	Supply Chain Agility (AG 1)	Order Supply Chain Agility (AG 1.1)	"Every need can be served at any time." (P)
		Transform Supply Chain Agility (AG 1.3)	"So, based on my long experience in telecommunications competition, especially in distribution, IM3 has one advantage, which is bonding, bonding between the sales team and the outlets. So one way to maintain it is through regular scheduled visits, whether requested or not." (P)

No.	Performance Indicators (Code)	Sub-Indicators (Code)	Interview Excerpts (Speaker Code)
5	Total Supply Chain Management Cost (CO 1)	Order Management Cost (CO 1.1)	"When it comes to costs, it's relative. Sometimes we need it for expensive items, sometimes not. It depends on the value given to the society or consumers, some expensive things are not. To anticipate that, we anticipate things like that. of course, the first one is more effective. Effectiveness is related to time. So, how quickly we distribute the goods to the market. It's related to effectiveness. How fast and satisfyingly we distribute the goods to the outlets." (HU)
		Supply Chain Finance & Planning Cost (CO 1.4)	"This efficiency is related to funds. Related to the costs incurred. Well, this is also what we do by making our funds more efficient. The costs we incur are redirected to additional values. Additional benefits without incurring costs, just by strengthening education, for example, an additional 1gb quota. This doesn't use too much cost, just through the system, the important thing is not to reduce total spending." (HU)
		New Product Release Phase-In and Maintenance (CO 1.6)	"Usually, when products are launched, they must reach the market as quickly as possible before competitors respond to it. This becomes a challenge and quite challenging" (P)
		Order Fulfillment (CO 1.11)	"The second competition is the price. This price is a concern. Because people's purchasing power decreases day by day, their purchasing power decreases and the prices of other staple goods also increase. Now, to anticipate that, there are several ways. One is to adjust the quota. So the quota is reduced but the price remains the same or the price increases but the quota remains the same. Depending on the region or the segmentation we want to target." (HU)
		Distribution (CO 1.12)	"The distributors are divided into various clusters. Each distributor is responsible for one cluster, where they will be responsible for distributing all our products, both physical and electronic." (P)
		Transportation, Outbound Freight and Duties (CO 1.13)	"The outlets that must be visited at least once a week, or we usually call it F4. There are also some outlets that are quite busy, with a lot of customers but limited capital, so they shop maybe twice a week or we call it F8. Or even there are those F12 which are visited three times a week, because they are so busy yet their capital is still limited so our salespeople have to visit that store or outlet three times a week." (P)
6	Cash to Cash Cycle Time (AM 1)	Days Sales Outstanding (AM 1.1)	"The mandatory allocation, we have calculated the average amount used so far and then added with the achievement of the target. We calculate and distribute it, and the distribution is NCP, its Net Cover Population, the population covered by that network, we count all of this, then we allocate it to the distributor, the distributor must redeem it because we have calculated it." (HU)
		Inventory Days of Supply (AM 1.2)	"When it comes to the outlets, the targets are usually based on history. Usually, the sales of products per month are such, the prime ones such, the vouchers such, then the credit such, these are usually set as targets" (P)
		Percentage of Defective Inventory (AM 1.6)	"The possibility of defects is relatively rare in starter packs, because the concept is if it's a starter pack, the available number can be activated and used. The possible defects are physical vouchers, Mr. Inu's. These physical vouchers, because they are physical, they are ready to use, for example, 1.5 gigs or 2.5 gigs or 5 gigs, these are ready to use,

No.	Performance Indicators (Code)	Sub-Indicators (Code)	Interview Excerpts (Speaker Code)
			sometimes when they are scratched or rubbed, the numbers are sometimes scratched off with the voucher so they cannot be read" (P)
		Percentage of Excess Inventory (AM 1.7)	"We allocate it to the distributor, the distributor must redeem it because we have calculated it." (HU)
7	Return on Fixed Assts (AM 2)	Revenue (AM 2.1)	"This revenue starts from acquiring customers, so we ensure this supply is fulfilled, this supply, each cluster has an MPC or SDP managing each of its clusters, which have sites or BTSs, in each BTS, we also oblige the MPC or our partner to get outlets, retail outlets, which they will represent us to distribute our products, making our products closer to the customers" (P)
		Fixed Assets (AM 2.2)	"The assets (of the company) are human resources. Human resources, earlier what's called Site or BTS. Those are our assets (in each region)." (P)
8	Material Used (EV 1)	Recovery Potential of Materials Used (EV 1.4)	"Previously,
9	Greenhouse Gass (GHG) Emissions (EV 4)	Direct (Scope 1) GHG Emissions (EV 4.1)	Interview Excerpts (Speaker Code)
		GHG Emissions Intensity (EV 4.4)	"The target (allocation of physical products) cascades down to sales and to each outlet" (P)
10	Diversity and Inclusion (SC 1)	Diversity and Inclusion (SC 1.1)	"Then, the distance and location determine the cost and also the delivery time. While competing, the time to market is crucial. That's the main thing, the speed of delivering to the market" (P)
11	Wage Level (SC 2)	Wage Level (SC 2.1)	"Relatively, there are rarely defects in starter packs" (P)
12	Training (SC 3)	Employment (SC 3.1)	"The outlet has options, there are prime products, or the aforementioned starter packs which are original, for example starting from 3 gigs, 9 gigs then 11 gigs and there's also 20 gigs, but there are also starter packs that are zero-based, no credit included, no packages, which can be injected by each outlet partner as per customer needs" (P)
		New Employee Hires (SC 3.2)	"OJA, On the Job Audit, is to evaluate whether our colleagues have followed the standard visit procedures to each store. In terms of distribution, both the quantity of goods, arrangement, and education" (P)
		Anti-Corruption (SC 3.4)	"For example, if an outlet needs additional products outside the scheduled visit, there are two ways; they can call the salesperson, whom they are already familiar with, then the product can be delivered, or picked up by the salesperson. It can be done by phone, then transferred, sent later, or topped up with the needed credit." (P)
		Occupational Safety & Health (SC 3.5)	"So, it can be conveyed through their salesperson to be communicated to the internal Indosat team for checking, for example, if there are such defects" (P)
		Pay Equality (SC 3.8)	"If there is no return system, then this is not a purchase, it's like buying a cat in a sack, there's no guarantee" (P)
		Child Labor (SC 3.10)	"So, the previous visit was more for control, to ensure that each of our partners is taken care of by our sales team, whether the visit is requested or not" (P)

No.	Performance Indicators (Code)	Sub-Indicators (Code)	Interview Excerpts (Speaker Code)
		Career and Development (SC 3.11)	"There are also some outlets that are quite busy, with a lot of customers but limited capital, so they shop maybe twice a week, or what we call F8" (P) "Regular visits are scheduled, whether requested or not. If it's according to the schedule, our salespeople must visit the outlet" (P)

Source: Reprocessed Primary Data

Next, the researcher compiled a list of questions referring to the sub-indicators of performance in the table above. Subsequently, the researcher distributed an online questionnaire via Google Form to both internal and external parties to assess the performance of the supply chain and to answer research question number 2 (two).

4.2. Quantitative

The distribution of the questionnaire is the method used in collecting quantitative data in this research. The questionnaire was distributed online through Google Form with the option "Verified" in the "Collect email addresses" setting, ensuring that respondents who filled it out were unique as they had to log in through their respective email addresses.

There were 101 external respondents (outlets) and 6 internal respondents (IM3 employees) who completed the questionnaire from November 25, 2023, to December 26, 2023. External respondents provided responses to the questionnaire with variables such as Perfect Order Fulfillment (RL1), Perfect Return Order Fulfillment (RL 3), Order Fulfillment Cycle Time (RS 1), and Supply Chain Agility (AG 1). Meanwhile, internal respondents provided responses to the questionnaire with variables such as Total Supply Chain Management Cost (CO 1), Cash to Cash Cycle Time (AM 1), Return on Fixed Assets (AM 2), Material Used (EV 1), Greenhouse Gas (GHG) Emissions (EV 4), Diversity and Inclusion (SC 1), Wage Level (SC 2), and Training (SC 3). After processing the questionnaire, demographic data of the respondents were generated as follows:

4.2.1 Characteristics of External Respondents (Outlets)

A. Demographics Based on Gender of Respondents

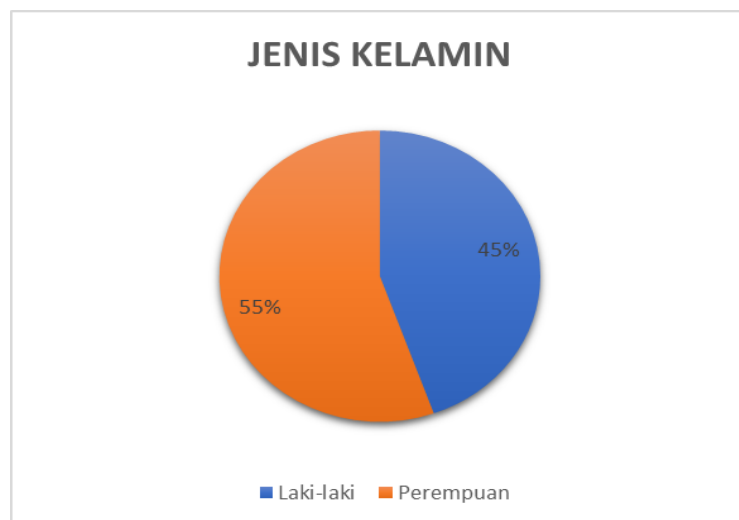


Figure: 1 Diagram of Respondents Based on Gender

Based on the diagram above, it can be seen that 55% of respondents (56 people) were female, while the remaining 45% (45 people) were male respondents.

B. Demographics Based on Age of Respondents

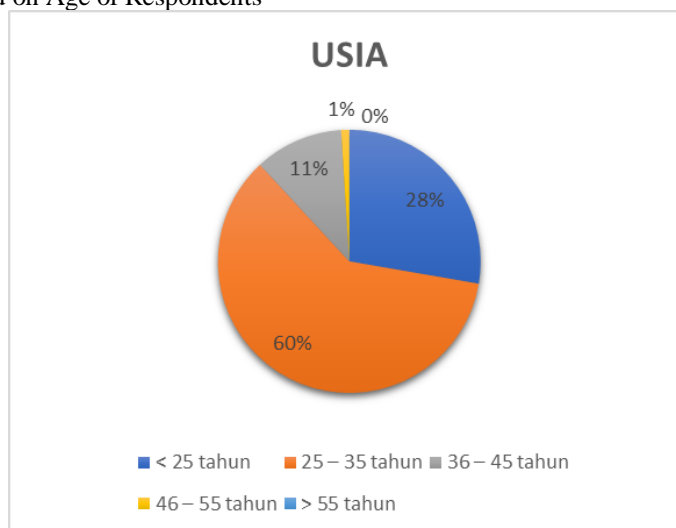


Figure: 2 Diagram of Respondents Based on Age

Based on the data processing results, the majority of respondents were aged 25-35 years (60%) or a total of 61 respondents. Meanwhile, respondents above 45 years old were only 1 respondent (1%). The remaining 39 respondents were in the age range of <25 years (28%) and 36-45 years (11%).

C. Demographics Based on Location of Respondent Outlets

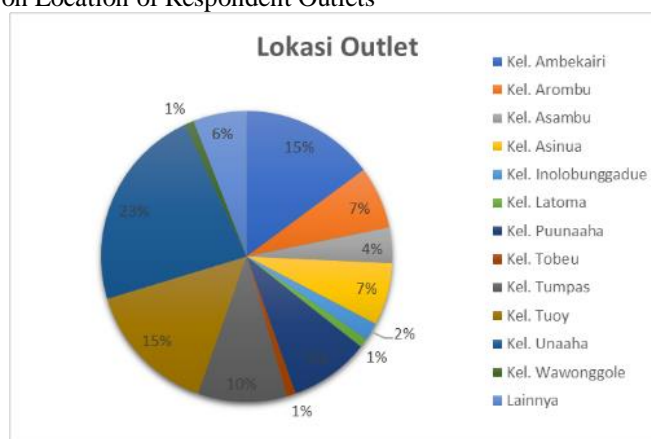


Figure: 3 Diagram of Respondents Based on Outlet Location

The diagram above shows the distribution of outlet locations from respondents, mentioned in neighborhood areas. The results showed that 94% were within the research area, while the remaining 6% (6 outlets) were outside the research area (others). However, it is possible that respondents who chose the "others" option in the questionnaire were newcomers who owned outlets in the research area but were not sure of the name of the neighborhood where their outlets were located. Most of the outlets in figure 3 were in Unaaha neighborhood (23%) or a total of 23 outlet respondents. Unaaha neighborhood is a bustling area located in the Unaaha district.

D. Demographics Based on Age of Respondent Outlets

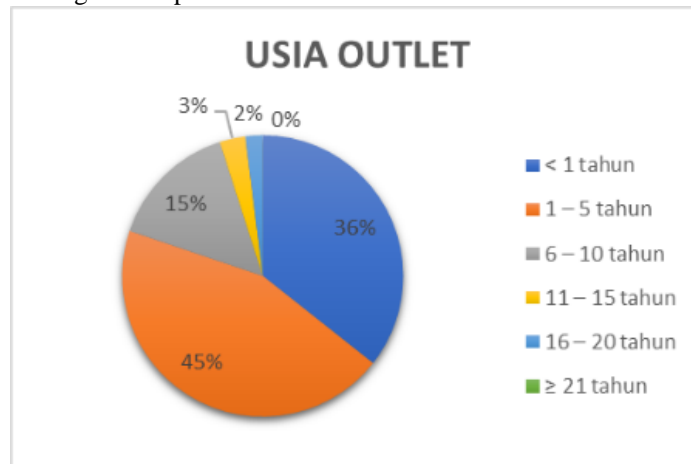


Figure: 4 Diagram of Respondents Based on Outlet Age

Based on figure 4, it is known that the age of respondent outlets is divided into 6 age categories. The age category of outlets < 1 year was 36 outlets (36%), the age category of 1-5 years was 45 outlets (45%), the age category of 6-10 years was 15 outlets (15%), the age category of 11-15 years was 3 outlets (3%), the age category of 16-20 years was 2 outlets (2%), and the age category of > 20 outlets was 0 outlets.

From 101 respondents, the majority were outlets with ages above 1 year. Businesses that have survived for more than 1 year tend to be able to adapt to the development of the times and tend to be more stable in expanding their businesses, thus requiring suppliers that provide more competitive prices and services.

E. Demographics Based on Duration of Cooperation with IM3

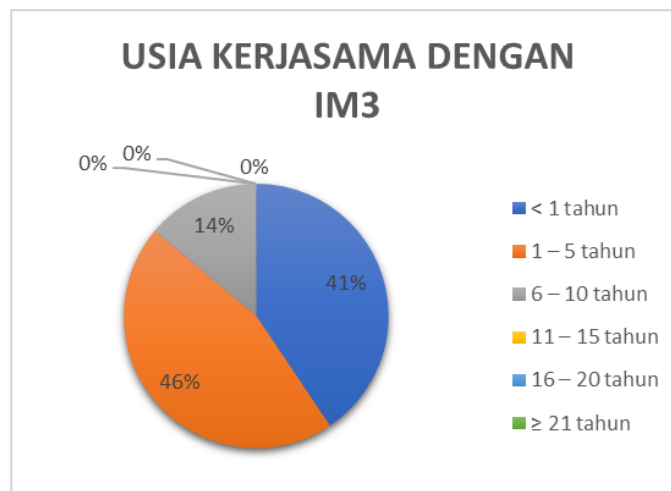


Figure: 5 Diagram of Respondents Based on Duration of Cooperation with IM3

From figure 5, it can be seen that outlets cooperating with IM3 with a duration of cooperation < 1 year amounted to 41 outlets (41%), almost equivalent to those with a cooperation duration of 1-5 years (46%), and far above outlets with a cooperation duration of 6-10 years (14%). This is reasonable because the Indosat signal has only been evenly distributed in the Unaaha district for approximately 1 year.

4.2.2 Characteristics of Internal Respondents (IM3 Employees)

A. Demographics Based on Gender of Respondents

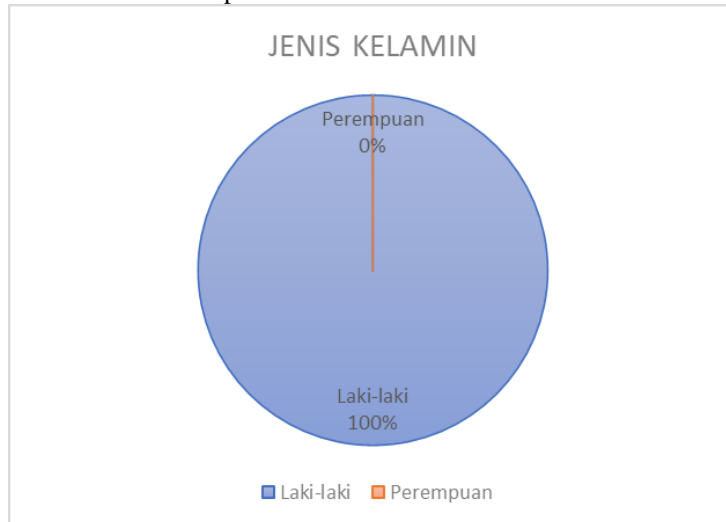


Figure: 6 Diagram of Respondents Based on Gender

Based on figure 6, it is known that all 6 internal respondents were male (100%).

B. Demographics Based on Age of Respondents

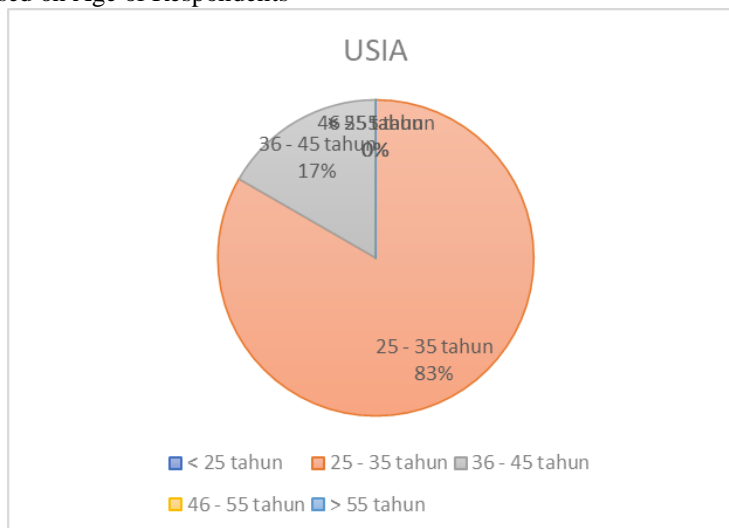


Figure: 7 Diagram of Respondents Based on Age

Based on figure 7, it is known that 5 respondents (83%) were aged between 25-35 years, and the remaining 1 respondent (17%) was aged 36-45 years. This indicates that IM3 employees responsible for the supply chain process in the research area are all within the productive age range.

C. Demographics Based on Respondents' Positions

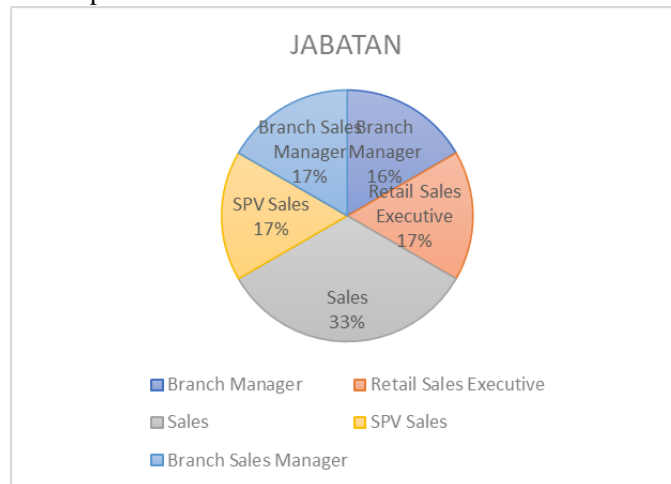


Figure: 8 Diagram of Respondents Based on Position

Based on figure 8, it is known that 2 respondents (33%) held the position of Sales. This is because the sales position directly interacts with outlets and their areas are in the Unaaha district. Meanwhile, the other 4 respondents have broader work areas, such as Branch Sales Manager (Southeast Sulawesi province), Branch Manager (Southeast Sulawesi province), Retail Sales Executive (Konawe district, North Konawe district, and South Konawe district), and SPV Sales (Konawe district, North Konawe district, South Konawe district, and Kendari City).

D. Demographics Based on Respondents' Length of Employment

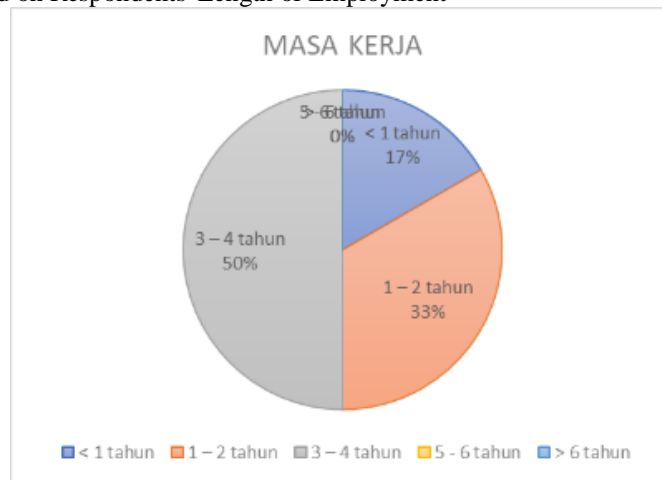


Figure: 9 Diagram of Respondents Based on Length of Employment

Based on figure 9, it is shown that 83% of respondents have been working for more than 1 year, with details of 1-2 years of employment for 2 respondents (33%) and 3-4 years of employment for 3 respondents (50%). Only 1 respondent had less than 1 year of employment.

E. Demographics Based on Respondents Work Experience in the Telecommunications Industry



Figure: 10 Diagram of Respondents Based on Work Experience

Based on figure 10, it is known that 5 respondents have experience in the telecommunications industry for more than 1 year. In fact, 2 respondents (29%) have more than 6 years of experience.

4.2.3 Research Results

A. Descriptive Analysis

Descriptive statistical presentation aims to describe the characteristics of the sample tested in a study, as well as provide descriptions of the variables used in the study. In conducting descriptive analysis in this study, the method used was first to compile frequency distribution tables. Then, categorize the importance ranking or weight of each research variable using the Analytic Hierarchy Process (AHP) technique processed using Superdecision software. And finally, multiply these rankings or weights by the scores from respondent responses to obtain the supply chain performance score.

The respondent response scores were taken from the calculation of all respondent answers according to the classification of the given values (1, 2, 3, 4, and 5). The formula to determine the percentage score is as follows

$$S_{norm} = \frac{(S_i - S_{min})}{(S_{max} - S_{min})} \times 100$$

Figure: 11 Percentage Score Formula

The calculation results were then classified with the table of Performance Indicator Values below:

Table 3

Performance Indicator Value Standards

Monitoring System	Performance Indicator	Explanation
< 40	Poor	Very Poor
40 – 50	Marginal	Marginal
50 – 70	Average	Moderate
70 – 90	Good	Good
> 90	Excellent	Excellent

Source: Trienekens, Jacques H. & Hans Henrik Hvolby (2000)

1. IM3 IM3 Supply Chain Performance Value

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation was initiated by filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 4

Supply Chain Performance Indicator Comparison Matrix

Evaluation of Supply Chain Management in Efforts to Achieve

	RL 1	RL 3	RS 1	AG 1	CO 1	AM 1	AM 2	EV 1	EV 4	SC 1	SC 2	SC 3
RL 1	1.00	0.00	0.19	1.73	3.87	1.73	3.87	9.00	0.17	0.26	0.26	0.33
RL 3	0.00	1.00	4.00	6.00	7.35	4.24	9.00	0.26	1.00	3.00	3.00	5.48
RS 1	0.19	6.71	1.00	5.00	3.87	5.00	9.00	0.29	0.29	0.41	0.29	3.87
AG 1	1.73	4.00	5.48	1.00	0.87	1.00	9.00	0.33	0.17	0.20	0.26	5.92
CO 1	3.87	6.00	5.00	3.87	1.00	1.29	6.71	0.26	0.20	0.26	0.20	5.00
AM 1	1.73	7.35	3.87	0.87	5.92	1.00	9.00	0.26	0.26	0.20	0.20	0.77
AM 2	3.87	4.24	5.00	1.00	1.29	5.00	1.00	0.11	9.00	9.00	9.00	5.20
EV 1	9.00	9.00	9.00	9.00	6.71	9.00	0.77	0.11	0.11	0.11	0.19	5.00
EV 4	0.17	0.26	0.29	0.33	0.26	0.26	0.11	0.11	1.00	3.00	0.58	5.00
SC 1	0.26	0.41	0.29	0.17	0.20	0.26	0.11	0.11	5.00	1.00	3.87	7.00
SC 2	0.26	3.00	0.41	0.20	0.26	0.20	0.11	0.19	3.00	5.00	1.00	7.00
SC 3	0.33	3.00	0.29	0.26	0.20	0.20	0.11	0.33	0.58	3.87	7.00	1.00
	22.42	44.97	34.82	29.43	31.79	29.18	48.80	11.37	20.77	26.31	25.85	51.57

Source: Primary Data Reanalyzed

Then, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below.

b. Data Distribution Frequency

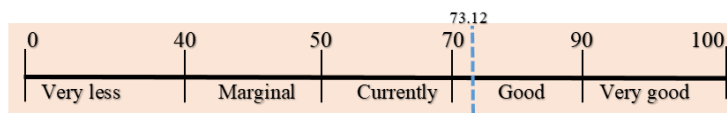
Table 5

Supply Chain Performance Data Distribution

Item	STS 1	TS 2	N 3	S 4	SS 5	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
AG 1	0	0	9	118	75	202	874	1010	83.2	0.104	8.32	Good
AM 1	0	0	3	20	1	24	94	120	72.9	0.183	13.12	Good
AM 2	0	1	4	3	4	12	46	60	70.8	0.183	12.74	Good
CO 1	0	0	11	25	0	36	133	180	67.4	0.085	5.39	Currently
EV 1	1	0	1	3	1	5	21	25	80	0.017	1.6	Good
EV 4	0	1	3	8	0	12	43	60	64.5	0.083	5.35	Currently
RL 1	0	0	18	368	220	606	2626	3030	83.3	0.109	9.08	Good
RL 3	0	1	30	167	105	303	1285	1515	81	0.015	1.05	Good
RS 1	0	1	36	341	228	606	2614	3030	82.8	0.035	2.89	Good
SC 1	0	0	2	5	5	12	51	60	81.3	0.032	2.60	Good
SC 2	0	0	0	6	0	6	24	30	75	0.036	2.70	Good
SC 3	2	1	4	29	6	42	162	210	71.4	0.116	8.28	Good
Supply Chain Score											73.12	Good

Source: Primary Data Reanalyzed

Based on Table 5, it can be observed that respondents' assessments of the Supply Chain performance were categorized as Good with a total score of 73.12. The highest score (13.12) was recorded for item AM 1, "Cash to Cash Cycle Time," which represents the time required to convert product inventory into cash. Based on the calculation above, the continuum line for Supply Chain performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the IM3 Supply Chain performance in the Unaaha district, Konawe regency, Southeast Sulawesi, was already Good. However, there is still room for improvement as the obtained figures were almost within the Moderate category, especially in the 3 indicator items with the highest weights: AM1, AM2, and AG1.

2. Supply Chain Agility Performance Value ((AG 1)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation commenced with the completion of comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 6
AG1 Sub-Indicator Comparison Matrix

Item	AG (1.1)	AG (1.3)
AG (1.1)	1.00	0.58
AG (1.3)	0.58	1.00
Total	1.58	1.58

Source: Primary Data Reanalyzed

Subsequently, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

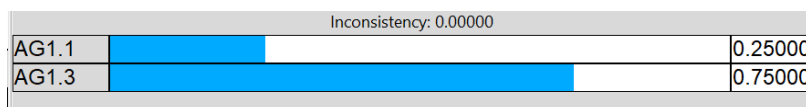


Figure: 12 Weighted Result Sub-Indicator AG1

Source: Super decision Screenshot

b. Data Distribution Frequency

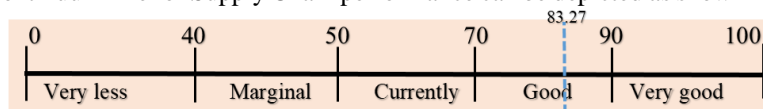
Table 7

Sub-Indicator AG1 Performance Data Distribution

Item	STS 1	TS 2	N 3	S 4	SS 5	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
AG 1.1	0	0	4	61	36	101	436	505	82.9	0.250	20.72	Good
AG 1.3	0	0	5	57	39	101	438	505	83.4	0.750	62.55	Good
Supply Chain Agility (AG 1) Score											83.27	Good

Source: Primary Data Reanalyzed

Based on Table 7, it can be seen that respondents' assessments of the Supply Chain Agility performance were categorized as Good with a total score of 83.27. The highest score (62.55) was attributed to item AG 1.1, "Order Supply Chain Agility," representing the sales readiness level to place orders outside of visits, also categorized as Good. The lowest score (20.72) was recorded for item AG 1.3, "Transform Supply Chain Agility," representing the responsiveness of sales in responding to consumer complaints, also categorized as Good. Based on the calculation above, the continuum line for Supply Chain performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the IM3 Supply Chain performance in the Supply Chain Agility indicator was already Good. For the item with the highest weight, AG 1.3, it had obtained a higher snorm score than the other items.

3. Cash to Cash Cycle Time (AM 1) Performance Value
 a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation was initiated by filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 8
 AM1 Sub-Indicator Comparison Matrix

Item	AM 1.1	AM 1.2	AM 1.6	AM 1.7
AM 1.1	1.00	0.65	0.22	0.53
AM 1.2	0.65	1.00	0.26	0.26
AM 1.6	0.22	0.26	1.00	3.00
AM 1.7	0.53	0.26	3.00	1.00
Total	2.41	2.17	4.48	4.79

Source: Primary Data Reanalyzed

Then, the comparison matrix above was processed using Super decision software, and the ranking or weight results were obtained with value levels as shown in the figure below:

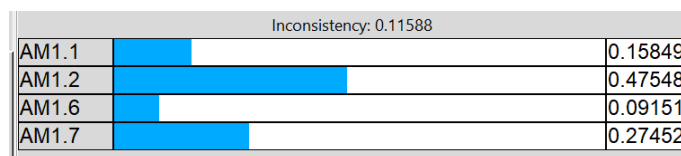


Figure: 13 Weighted Result Sub-Indicator AM1
 Source: Super decision Screen Capture

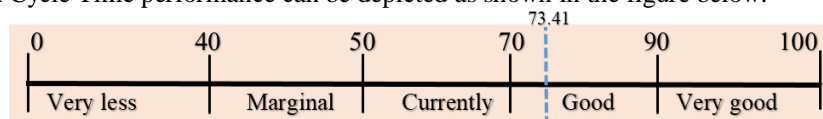
b. Data Distribution Frequency

Table 9
 Distribution of AM1 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
AM 1.1	0	0	0	6	0	6	24	30	75	0.158	11.85	Good
AM 1.2	0	0	0	5	1	6	25	30	79.2	0.475	37.62	Good
AM 1.6	0	0	0	6	0	6	24	30	75	0.091	6.82	Good
AM 1.7	0	0	3	3	0	6	21	30	62.5	0.274	17.12	Currently
Cash to Cash Cycle Time (AM 1) Score											73.41	Good

Source: Primary Data Reanalyzed

Based on Table 9, it can be observed that respondents' assessments of the Cash to Cash Cycle Time performance were categorized as Good with a total score of 73.41. The highest score (37.62) was recorded for item AM 1.2, "Inventory Days of Supply," representing the product availability level in the warehouse depot, also categorized as Good. The lowest score (6.82) was recorded for item AM 1.6, "Percentage of Defective Inventory," representing the percentage of defective products in the warehouse depot. Based on the calculation above, the continuum line for Cash to Cash Cycle Time performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Cash to Cash Cycle Time indicator was already Good. However, the obtained value almost falls into the Moderate category due to 1 (one) item with the second-highest weight (AM 1.7) scoring below 70.

4. Return on Fixed Assets (AM 2) Performance Value
 a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation was initiated by filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 10
 AM2 Sub-Indicator Comparison Matrix

Item	AM 2.1	AM 2.2
AM 2.1	1.00	0.11
AM 2.2	0.11	1.00
Total	1.11	1.11

Source: Primary Data Reanalyzed

Subsequently, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

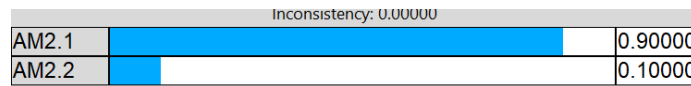


Figure: 14 Weighted Result Sub-Indicator AM2
 Source: Super decision Screen Capture

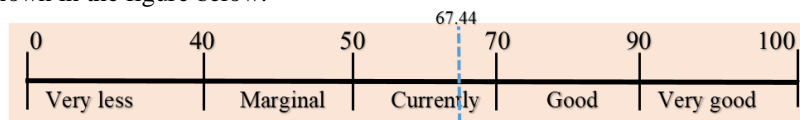
b. Data Distribution Frequency

Table 11
 Distribution of AM2 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
AM 2.1	0	1	2	1	2	6	22	30	66.6	0.900	59.94	Currently
AM 2.2	0	0	2	2	2	6	24	30	75.0	0.100	7.50	Good
Return on Fixed Assets (AM 2) Score											67.44	Currently

Source: Primary Data Reanalyzed

Based on Table 11, it can be seen that respondents' assessments of the Return on Fixed Assets performance were categorized as Moderate with a total score of 67.44. The highest score (59.94) was attributed to item AM 2.1, "Revenue," representing the Company's revenue from the Site, also categorized as Moderate. The lowest score (7.50) was recorded for item AM 2.1, "Fixed Assets," representing the current available network additions, categorized as Good. Based on the calculation above, the continuum line for Return on Fixed Assets performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Return on Fixed Assets indicator was still categorized as Moderate. Items with significant roles, indicated by weight figures, have not yet contributed significantly to the performance value. These items play a crucial role in the overall sustainability of the Indosat Ooredoo Hutchison business.

5. Total Supply Chain Management Cost (CO 1) Performance Value
 a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation was initiated by filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 12
CO1 Sub-Indicator Comparison Matrix

Item	CO 1.1	CO 1.4	CO 1.6	CO 1.11	CO 1.12	CO 1.13
CO 1.1	1.00	1.00	0.58	1.29	4.58	1.00
CO 1.4	1.00	1.00	0.33	1.00	1.73	1.00
CO 1.6	0.58	0.33	1.00	1.73	1.29	3.87
CO 1.11	1.29	1.00	1.73	1.00	1.29	0.58
CO 1.12	4.58	1.73	1.29	1.29	1.00	0.26
CO 1.13	1.00	1.00	3.87	0.58	0.26	1.00
Total	9.45	6.07	8.81	6.89	10.15	7.71

Source: Primary Data Reanalyzed

Then, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

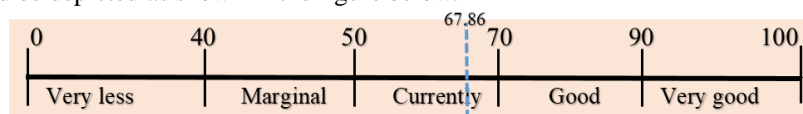
b. Data Distribution Frequency

Table 13
Distribution of CO 1 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
CO 1.1	0	0	3	3	0	6	21	30	62.5	0.141	8.81	Currently
CO 1.4	0	0	2	4	0	6	22	30	66.6	0.231	15.38	Currently
CO 1.6	0	0	2	4	0	6	22	30	66.6	0.147	9.79	Currently
CO 1.11	0	0	1	5	0	6	23	30	70.8	0.145	10.27	Currently
CO 1.12	0	0	2	4	0	6	22	30	66.6	0.228	15.18	Currently
CO 1.13	0	0	1	5	0	6	23	30	78.8	0.107	8.43	Good
Total Supply Chain Management Cost (CO 1) Score											67.86	Currently

Source: Primary Data Processed Again

Based on Table 13, it can be observed that respondents' evaluations of the Total Supply Chain Management Cost performance were categorized as Moderate with a total score of 67.86. The highest score (15.38) was recorded for item CO 1.4, "Supply Chain Finance & Planning Cost," representing the expenses incurred for the supply chain process, also categorized as Moderate. The lowest score (8.43) was recorded for item CO 1.13, "Transportation, Outbound Freight, and Duties," representing the effectiveness of sales visit routes, categorized as Good. Based on the calculation above, the continuum line for Total Supply Chain Management Cost performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Total Supply Chain Management Cost indicator is still categorized as Moderate. Items that play crucial roles, as indicated by weight values, have not yet achieved above-average scores.

6. Performance Value of Material Used (EV 1)

a. Analytics Hierarchy Process (AHP) Calculation

The Material Used indicator only has 1 (one) sub-indicator, so its importance value is 1 because there is no comparison.

b. Data Distribution Frequency

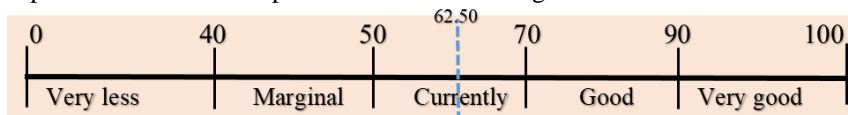
Table 14

Distribution of EV1 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
EV 1.4	1	0	1	3	1	6	21	30	62.5	1	62.5	Currently
Material Used (EV 1) Score											62.5	Currently

Source: Primary Data Processed Again

Based on Table 14, it can be seen that the Material Used indicator only has 1 (one) sub-indicator, EV 1.4 "Recovery Potential of Materials Used," with a value of 62.5. Based on the calculation above, the continuum line for Material Used performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Material Used indicator is still categorized as Moderate.

7. Performance Value of Greenhouse Gas (GHG) Emissions (EV 4)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation started with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 15

EV4 Sub-Indicator Comparison Matrix

Item	EV 4.1	EV 4.4
EV 4.1	1.00	2.24
EV 4.4	2.24	1.00
Total	3.24	3.24

Source: Primary Data Processed Again

Subsequently, the above comparison matrix was processed using Superdecision software, resulting in ranking or weight values as shown in the figure below:

Inconsistency: 0.00000		
EV4.1		0.50000
EV4.4		0.50000

Figure: 15 Weighted Result Sub-Indicator EV 4

Source: Super decision Screen Capture

b. Data Distribution Frequency

Table 16

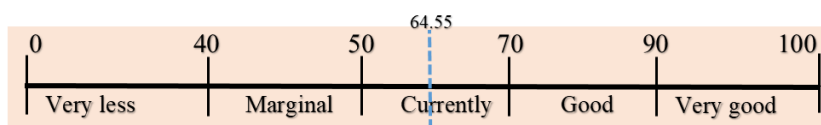
Distribution of EV4 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
EV 4.1	0	1	1	4	0	6	21	30	62.5	0.500	31.25	Currently
EV 4.4	0	0	2	4	0	6	22	30	66.6	0.500	33.30	Currently
Greenhouse Gass (GHG) Emissions (EV 4) Score											64.55	Currently

Source: Primary Data Processed Again

Based on Table 16, it can be observed that respondents' evaluations of Greenhouse Gas (GHG) Emissions performance were categorized as Moderate with a total score of 64.55. The highest score (33.30) was recorded for item EV 4.4, "GHG Emissions Intensity," representing the intensity of emissions from Sales vehicles, also

categorized as Moderate. The lowest score (31.25) was recorded for item EV 4.1, "Direct (Scope 1) GHG Emissions," representing emissions from sales vehicles, also categorized as Moderate. Based on the calculation above, the continuum line for Greenhouse Gas (GHG) Emissions performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Greenhouse Gas (GHG) Emissions indicator was still categorized as Moderate. This requires attention, especially regarding the effectiveness of motor vehicle usage (EV 4.1). The more effective the use of motor vehicles, the greater the company's profits and the less environmental contamination from emissions.

8. Performance Value of Perfect Order Fulfillment (RL1)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation began with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 17

RL 1 Sub-Indicator Comparison Matrix

Item	RL 1.1	RL 1.2	RL 1.4	RL 1.5	RL 1.6	RL 1.11
RL 1.1	1.00	1.00	0.33	1.15	1.73	0.33
RL 1.2	1.00	1.00	0.58	1.00	1.73	0.33
RL 1.4	0.33	0.58	1.00	2.45	2.45	1.00
RL 1.5	1.15	1.00	2.45	1.00	3.00	0.33
RL 1.6	1.73	1.73	2.45	3.00	1.00	0.33
RL 1.11	0.33	0.33	1.00	0.33	0.33	1.00
Total	5.55	5.64	7.81	8.94	10.25	3.33

Source: Primary Data Processed Again

Subsequently, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

b. Data Distribution Frequency

Table 18

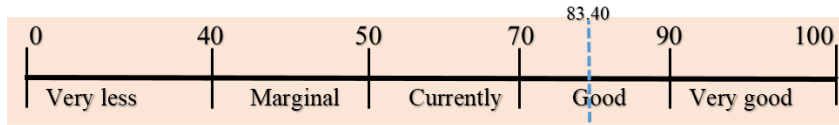
Distribution of RL 1 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
RL 1.1	0	0	3	65	33	101	434	505	82.42	0.258	21.26	Good
RL 1.2	0	0	4	62	35	101	435	505	82.67	0.126	10.41	Good
RL 1.4	0	0	2	59	40	101	442	505	84.40	0.060	5.06	Good
RL 1.5	0	0	2	59	40	101	442	505	84.40	0.240	20.24	Good
RL 1.6	0	0	2	62	37	101	439	505	83.66	0.190	15.89	Good
RL 1.11	0	0	5	61	35	101	434	505	82.42	0.128	10.54	Good
Perfect Order Fulfillment (RL1) Score											83.40	Good

Source: Primary Data Processed Again

Based on Table 18, it can be seen that respondents' evaluations of Perfect Order Fulfillment performance were categorized as Good with a total score of 83.40. The highest score (21.26) was recorded for item RL 1.1, "Percentage of Orders Delivered in Full to the Customer," representing the ability to fulfill orders to be delivered on time and date requested by the customer, also categorized as Good. The lowest score (5.06) was recorded for item RL 1.4, "Customer Order Perfect Condition," representing orders delivered in good condition, also

categorized as Good. Based on the calculation above, the continuum line for Perfect Order Fulfillment performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Perfect Order Fulfillment indicator falls into the Good category. However, it can still be improved, especially in item RL 1.1, as it is still below the average performance value.

9. Performance Value of Perfect Return Order Fulfillment (RL 3)
 a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation began with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 19
 RL 3 Sub-Indicator Comparison Matrix

Item	RL 3.1	RL 3.2	RL 3.4
RL 3.1	1.00	1.00	1.00
RL 3.2	1.00	1.00	1.73
RL 3.4	1.00	1.73	1.00
Total	3.00	3.73	3.73

Source: Primary Data Processed Again

Subsequently, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

Inconsistency: 0.00000		
RL3.1		0.69231
RL3.2		0.07692
RL3.4		0.23077

Figure: 16 Weighted Result Sub-Indicator RL 3
 Source: Super decision Screen Capture

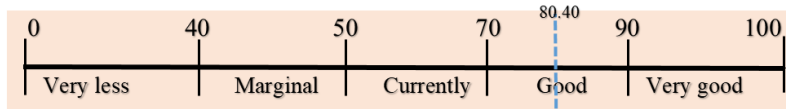
b. Data Distribution Frequency

Table 20
 Distribution of RL 3 Sub-Indicator Performance Data

Item	STS 1	TS 2	N 3	S 4	SS 5	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
RL 3.1	0	0	12	56	33	101	425	505	80.19	0.692	55.49	Good
RL 3.2	0	1	7	56	37	101	432	505	81.93	0.077	6.30	Good
RL 3.4	0	0	11	55	35	101	428	505	80.94	0.230	18.61	Good
Perfect Return Order Fulfillment (RL 3) Score											80.40	Good

Source: Primary Data Processed Again

Based on Table 20, it can be seen that respondents' evaluations of Perfect Return Order Fulfillment performance were categorized as Good with a total score of 80.40. The highest score (55.49) was recorded for item RL 3.1, "On Time, In Full (Correct Product)," representing returns delivered on time, complete, and with the correct product, also categorized as Good. The lowest score (6.30) was recorded for item RL 3.2, "Correct Documentation," representing compliance with administrative rules and conditions in returning defective products, also categorized as Good. Based on the calculation above, the continuum line for Perfect Return Order Fulfillment performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Perfect Return Order Fulfillment indicator was classified as Good. However, it could still be improved, especially in item RL 3.1, as it was still below the average performance value.

10. Performance Value of Order Fulfillment Cycle Time (RS 1)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation began with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 21

RS 1 Sub-Indicator Comparison Matrix

Item	RS 1.1	RS 1.4	RS 1.5	RS 1.31	RS 1.33	RS 1.35	RS 1.36
RS 1.1	1.00	1.29	3.00	0.26	3.00	3.87	0.77
RS 1.4	1.29	1.00	3.87	0.26	5.00	5.00	1.00
RS 1.5	3.00	3.87	1.00	0.26	0.20	0.77	0.20
RS 1.31	0.26	0.26	0.26	1.00	5.00	5.00	1.73
RS 1.33	3.00	5.00	0.20	5.00	1.00	1.73	1.00
RS 1.35	3.87	5.00	0.77	5.00	1.73	1.00	0.20
RS 1.36	0.77	1.00	0.20	1.73	1.00	0.20	1.00
Total	13.20	17.42	9.31	13.51	16.93	17.58	5.91

Source: Super decision Screen Capture

Then, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

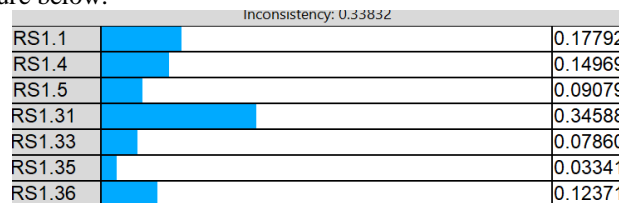


Figure: 17 Weighted Result Sub-Indicator RS 1

Source: Super decision Screen Capture

b. Data Distribution Frequency

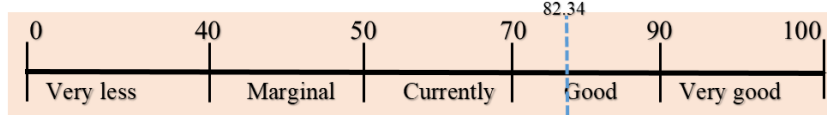
Table 22

Distribution of RS 1 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
RS 1.1	0	0	1	59	41	101	444	505	84.90	0.178	15.11	Good
RS 1.4	0	1	7	56	37	101	432	505	81.93	0.150	12.28	Good
RS 1.5	0	0	11	55	35	101	428	505	80.94	0.091	7.36	Good
RS 1.31	0	0	11	55	35	101	428	505	80.94	0.346	28.00	Good
RS 1.33	0	0	9	54	38	101	433	505	82.17	0.079	6.49	Good
RS 1.35	0	0	4	58	39	101	439	505	83.66	0.033	2.76	Good
RS 1.36	0	0	4	59	38	101	438	505	83.41	0.124	10.34	Good
Order Fulfillment Cycle Time (RS 1) Score											82.34	Good

Source: Primary Data Processed Again

Based on Table 22, it can be seen that respondents' evaluations of Order Fulfillment Cycle Time performance were categorized as Good with a total score of 82.34. The highest score (28.00) was recorded for item RS 1.31, "Route Shipments Cycle Time," representing the time required to visit all outlets, also categorized as Good. The lowest score (2.76) was recorded for item RS 1.35, "Assess Delivery Performance Cycle Time," representing the assessment of delivery speed, also categorized as Good. Based on the calculation above, the continuum line for Order Fulfillment Cycle Time performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Order Fulfillment Cycle Time indicator falls into the Good category. However, it could still be improved, especially in item RS 1.31, as it was still below the average performance value.

11. Performance Value of Diversity and Inclusion (SC 1)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation began with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 23

SC 1 Sub-Indicator Comparison Matrix

Item	SC (1.1)	SC (1.2)
SC (1.1)	1.00	0.41
SC (1.2)	0.41	1.00
Total	1.41	1.41

Source: Primary Data Processed Again

Then, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

Inconsistency: 0.00000		
SC1.1		0.33333
SC1.2		0.66667

Figure: 18 Weighted Result Sub-Indicator SC 1

Source: Super decision Screen Capture

b. Data Distribution Frequency

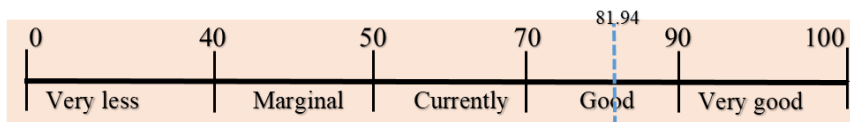
Table 24

Distribution of SC 1 Sub-Indicator Performance Data

Item	STS 1	TS 2	N 3	S 4	SS 5	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
SC 1.1	0	G0	1	3	2	6	25	30	79.16	0.333	26.36	Good
SC 1.2	0	0	1	2	3	6	26	30	83.33	0.667	55.58	Good
Diversity and Inclusion (SC 1) Score											81.94	Good

Source: Primary Data Processed Again

Based on Table 24, it can be seen that respondents' evaluations of Diversity and Inclusion performance were categorized as Good with a total score of 81.94. The highest score (55.58) was recorded for item SC 1.1, "Diversity," representing employees in the company being able to understand, accept, and appreciate differences, also categorized as Good. The lowest score (26.36) was recorded for item SC 1.2, "Inclusion," representing employees in the company having collaborative, supportive, and respectful relationships, also categorized as Good. Based on the calculation above, the continuum line for Diversity and Inclusion performance could be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Diversity and Inclusion indicator falls into the Good category. However, it still needs to be improved because there are still respondents who give Neutral responses. This means they are still unsure about the Diversity and Inclusion values in the Company.

12. Performance Value of Wage Level (SC 2)

a. Analytics Hierarchy Process (AHP) Calculation

The Wage Level indicator only has 1 (one) sub-indicator, so its importance value is 1 because there is no comparison.

b. Data Distribution Frequency

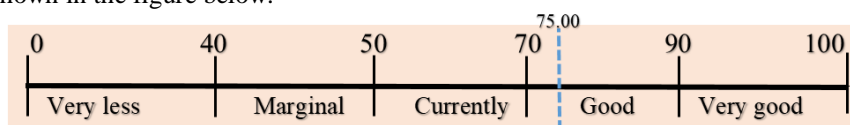
Table 25

Distribution of SC 2 Sub-Indicator Performance Data

Item	STS	TS	N	S	SS	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
	1	2	3	4	5							
SC 2.1	0	0	0	6	0	6	24	30	75.0	1	75.0	Good
Wage Level (SC 2) Score											75.0	Good

Source: Primary Data Processed Again

Based on Table 25, it can be seen that the Wage Level indicator only has 1 (one) sub-indicator, SC 2.1 "Wage Level," with a value of 75.0. Based on the calculation above, the continuum line for Wage Level performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Wage Level indicator is classified as Good.

13. Performance Value of Training (SC 3)

a. Analytics Hierarchy Process (AHP) Calculation

The AHP calculation began with filling out comparison questionnaires by 2 internal experts from Indosat Ooredoo Hutchison to determine the importance ranking of the Supply Chain performance indicators and sub-indicators, with comparison matrix values as shown in the table below:

Table 26

SC 3 Sub-Indicator Comparison Matrix

Item	SC 3.1	SC 3.2	SC 3.4	SC 3.5	SC 3.8	SC 3.10	SC 3.11
SC 3.1	1.00	3.00	1.00	3.00	3.00	3.00	0.26
SC 3.2	3.00	1.00	0.29	0.25	1.41	1.73	0.29
SC 3.4	1.00	0.29	1.00	3.00	3.00	3.00	0.20
SC 3.5	3.00	0.25	3.00	1.00	3.00	3.00	0.20
SC 3.8	3.00	1.41	3.00	3.00	1.00	3.00	0.20
SC 3.10	3.00	1.73	3.00	3.00	3.00	1.00	0.11
SC 3.11	0.26	0.29	0.20	0.20	0.20	0.11	1.00
Total	14.26	7.97	11.49	13.45	14.61	14.84	2.26

Source: Primary Data Processed Again

Then, the above comparison matrix was processed using Super decision software, resulting in ranking or weight values as shown in the figure below:

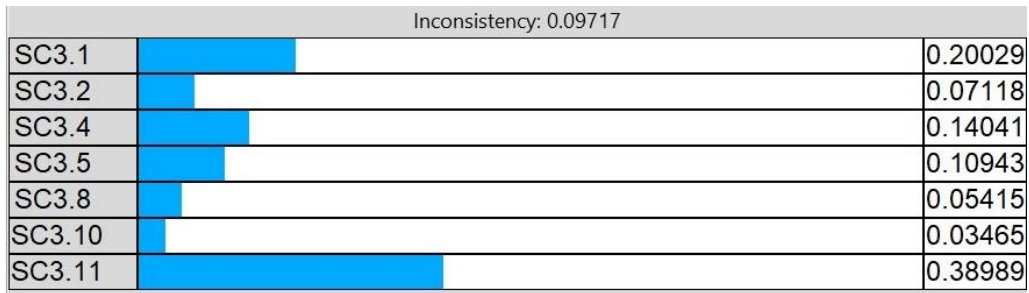


Figure: 19 Weighted Result Sub-Indicator SC 3
Source: Super decision Screen Capture

b. Data Distribution Frequency

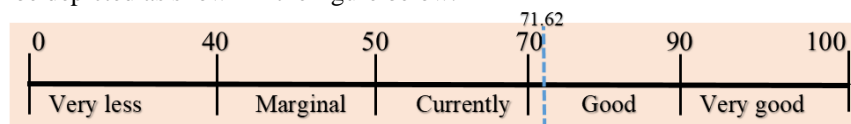
Table 27

Distribution of SC 3 Sub-Indicator Performance Data

Item	STS 1	TS 2	N 3	S 4	SS 5	Smin	Si	Smax	Snorm	Weight	Results	Indicator Value
SC 3.1	0	1	0	4	1	6	23	30	70.83	0.200	14.17	Good
SC 3.2	0	0	2	4	0	6	22	30	66.66	0.071	4.73	Currently
SC 3.4	0	0	0	5	1	6	25	30	79.16	0.140	11.08	Good
SC 3.5	1	0	0	3	2	6	23	30	70.83	0.109	7.72	Good
SC 3.8	1	0	0	3	2	6	23	30	70.83	0.054	3.82	Good
SC 3.10	0	0	1	5	0	6	23	30	70.83	0.035	2.48	Good
SC 3.11	0	0	1	5	0	6	23	30	70.83	0.390	27.62	Good
Training (SC 3) Score											71.62	Good

Source: Primary Data Processed Again

Based on Table 27, it can be seen that respondents' evaluations of Training performance were categorized as Good with a total score of 71.62. The highest score (27.62) was recorded for item SC 3.11, "Career and Development," representing career advancement and human resource (HR) development, also categorized as Good. The lowest score (3.82) was recorded for item SC 3.8, "Pay Equality," representing equal rights and obligations among employees, also categorized as Good. Based on the calculation above, the continuum line for Training performance can be depicted as shown in the figure below:



Therefore, it can be concluded that the Supply Chain performance in the Training indicator falls into the Good category. However, it still needs to be improved because the distance from the Good category to the Moderate category is only 1.62 points. Especially in the "key" items with significant weights, such as SC 3.11 and SC 3.1. Both of these items are still below the average performance value.

5. CONCLUSION

The coverage level of the area served by the Indosat Ooredoo Hutchison network in Konawe district was 51% of the total population, while in Unaaha sub-district it had reached 100% of the total population. There are 12 indicators and 40 sub-indicators, out of 20 indicators and 176 sub-indicators of SCOR 14 performance, in measuring the supply chain performance of IM3 physical products. The above indicators and sub-indicators are the result of validation from 2 internal experts of Indosat Ooredoo Hutchison. The experts also provide importance weights for each supply chain performance indicator and sub-indicator using the Analytic Hierarchy Process (AHP). The highest weights are AM 1 "Cash to Cash Cycle Time" and AM 2 "Return on Fixed Assets" with a score of 0.183. Both are indicators of the Asset Management Efficiency Performance Attribute. The lowest importance weight for the supply chain performance indicator is RL 3 "Perfect Return Order Fulfillment" with a score of 0.013, which is an indicator of the Reliability Performance Attribute. The highest globally weighted sub-indicator of supply chain performance is AM 2.1 "Revenue" with a score of 0.165, while the lowest globally weighted is RS 1.35 "Assess Delivery Performance Cycle Time" with a score of 0.001. The Supply Chain (SC) performance value in Unaaha sub-district, Konawe district, Southeast Sulawesi province is 73.12 and falls into

the Good category. 9 supply chain indicators fall into the Good category, while the remaining 3 fall into the Moderate category.

This study found that the performance value of the IM3 supply chain in Unaaha sub-district, Konawe district falls into the Good category. However, its performance can still be improved, especially in indicators and sub-indicators with dominant weights, to boost the overall supply chain performance value. It's also important to maintain the value of indicators and sub-indicators with lower weights. In future research, besides questionnaire distribution techniques, researchers are expected to use in-depth interview techniques, especially with internal stakeholders. Furthermore, in future research, researchers are expected to use interview techniques when determining comparison matrices in the Analytic Hierarchy Process (AHP) because many terms need to be explained in detail to the experts.

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