

Mega Kuningan ID FOOD Cold Chain Blueprint

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Abstract

ID FOOD cold chain blueprint to ensure operational success and product safety, so that companies can optimize the cold chain in the form of cold warehouse or cold storage infrastructure to meet market needs and ensure quality products reach customers safely in order to fulfill beef import infrastructure requirements Brazil from the National Food Agency, where the research was carried out through a case study exploration of the ID FOOD cold warehouse located on Jl. Denpasar Raya Kav DIII Mega Kuningan South Jakarta where the research was conducted using qualitative methods using triangulation which combines document collection, in-depth interviews, and observation in collecting primary and secondary data to obtain information as a basis for determining alternative options for cold warehouse operation cooperation in the absence of allocations. budget for repairs and procurement of new equipment that will be reactivated after damage has occurred in the last 10 years and standard operational procedures in the process of handling frozen products and maintaining cold warehouses, so that the operational option for the ID FOOD Mega Kuningan Cold Warehouse in its current condition is that there is no budget in 2024 for repairs and the construction of a new cold warehouse, the operational option for operational cooperation with the Fresh Factory cold chain company partner is the right choice with a cooperation scheme to carry out building repairs, renewal of cold warehouse equipment and licensing at the responsibility of the cooperation partner, sharing of knowledge and standard operating procedures, HR training in the cold chain sector and profits Sharing product storage and inventory fulfillment.

Keywords: Cold Chain, Operational Cooperation, Standard Operating Procedures.

INTRODUCTION

PT RNI (Persero) is a State-Owned Enterprise (BUMN) company designated by the government through the Ministry of BUMN as a Food Holding BUMN with a change in the name ID FOOD to provide clearer direction and focus as a Food Holding BUMN.

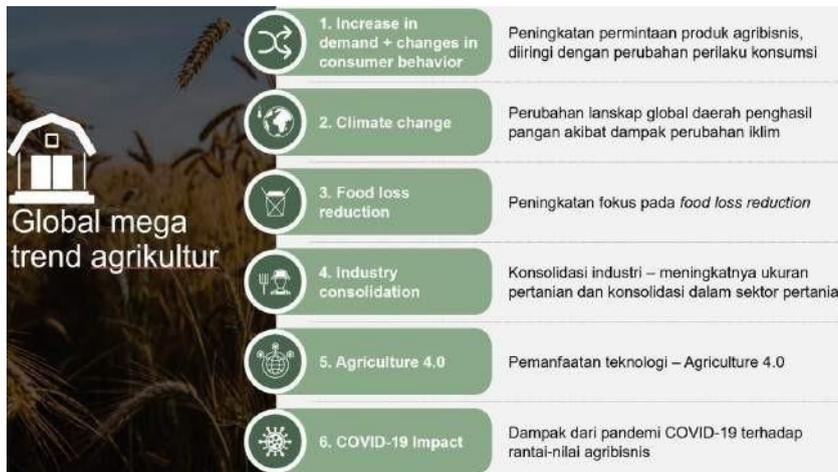
The determination to become the Holding Company for Food BUMN was marked by the signing of the Government Share Inbreg Deed between PT RNI (Persero) and the five Food BUMNs, namely PT Trade Indonesia, PT Garam, PT Berdikari, PT Perikanan Indonesia and PT Sang Hyang Seri on January 7 2022, where the company increased its subsidiary entities to 16 subsidiaries so that the Indonesian Government assigned RNI as the parent of the Food BUMN Holding (ID FOOD) to support the fulfillment of food availability, improve quality, price affordability and sustainability, including improving the welfare of farmers, livestock breeders, fishermen, as well as joint collaboration between state-owned food companies with business activities as follows:



Picture. 1 BUMN Food Holding

In the implementation of fulfilling food availability, ID FOOD is faced with global market challenges where the food sector is facing six main mega trends, which make food security increasingly important for every country to overcome, namely:

1. Increased demand and changes in consumer behavior
2. Climate change
3. Increased focus on food loss reduction
4. Industry consolidation
5. Utilization of agriculture 4.0 technology
6. The impact of the COVID-19 pandemic on the agribusiness chain



Source: Food BUMN Holding Study Document (2023), BCG Analysis.

Figure 2. Global Agricultural Mega Trend

Every year, globally 1.6 billion tonnes of food or around \$1.2 trillion is lost or wasted. One-third of the world's food is lost or wasted along the value chain, and as much as 23% is wasted in handling and storage. Food loss is when food is lost accidentally, for example due to spoilage, which mostly occurs at the agricultural and logistics level. Waste is when food is fit for human consumption but is thrown away, mostly at the retail level.



Sumber: FAO (2020), Laporan BCG

Figure 3. Food Loss Reduction

Beef imports from Brazil will contribute income to ID FOOD of approximately 1 trillion in 2024, so a domestic refrigerated supply chain is needed to maintain product quality from damage. In line with this, implementation requires an integrated supply chain in storage with temperature control for imported meat commodities to meet the import infrastructure requirements of the National Food Agency.

In the second quarter of 2024, ID FOOD will carry out an assignment to import 20,000 tons of frozen meat from Brazil, where in its implementation, from the total food stock management of 20,000 tons, it must prepare a buffer stock of 2500 tons to meet the first quarter of 2025.

Apart from the economic side, this assignment also provides benefits in providing price stability

and food supply as well as answering the issue of current food commodity availability, apart from that it is carried out in order to support stock availability during 2024.

Based on the government's assignment through the National Food Agency of the Republic of Indonesia Number 379.1/TS.03.03/K/11/2023 which is effective as of January 1 2024, the 2024 Administration of Government Food Reserves (CPP) for Food BUMNs assigned to meat imports in 2024 requires a FOOD ID must have cold chain infrastructure such as cold warehouses and be equipped with collaboration with cooperation partners.

Fulfillment of cold warehouse infrastructure is currently leased from private partners so that with these requirements ID FOOD must have the related infrastructure, while the budget for repairs to the cold warehouse owned in the Mega Kuningan area is not allocated and the determination of alternative options for operational cooperation to reactivate it after the last 10 years damaged and not functioning.

Determination of standard operational procedures in the process of handling frozen products and maintaining cold warehouses is required as a condition for operational permits so that with a cold chain blueprint to ensure operational success and safety of food products and companies can optimize the cold chain to meet market needs and ensure quality products reach consumers. with safe.

METHOD

The research was carried out from February 1 2024 to February 29 2024 with the ID FOOD cold storage object located on Jl. Denpasar Raya Kav DIII Mega Kuningan South Jakarta.

Qualitative methods are concerned with non-numerical data, collecting and analyzing narrative data. using focus groups, in-depth interviews, and observation in collecting data. (Sugiyono, 2017).

The research conducted an exploratory case study at the warehouse in depth regarding programs, events, processes, activities and researchers carried out detailed data collection using various data collection procedures and over a continuous period of time (Creswell, 2014)

Researchers deliberately select participants or sample units based on certain characteristics that are considered relevant to the research objectives. In purposive sampling, the researcher has a certain goal or criteria which is the basis for selecting the sample, so that each sample member is selected for certain reasons related to the research objectives. (Sugiyono, 2017)

In qualitative research, the term population is not used, but Spradley (2014) calls it "Social situation" or a social situation which consists of three elements, namely: place, actors and activity which interact synergistically.

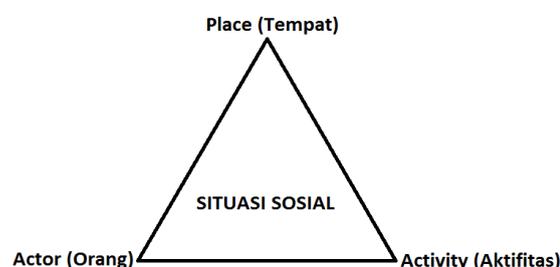


Figure 4: Social Situation

Data collection technique with triangulation: Combining several data collection methods, such as interviews, observation, and document analysis, to verify research findings (Sugiyono: 2017)

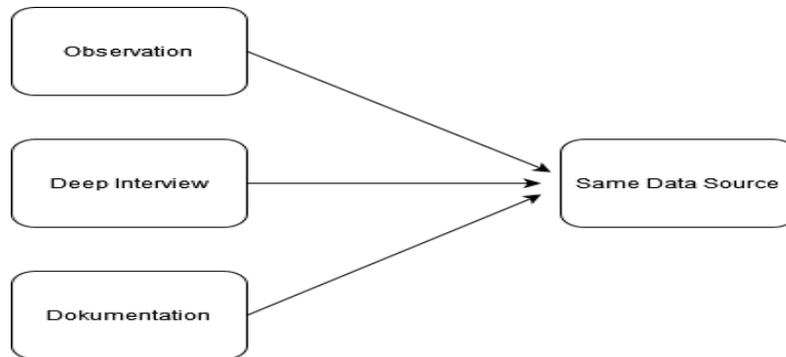


Figure 5: Triangulation Data Collection Technique

Interviews were conducted with the Assistant Manager for Supply Chain Management Integration and observation and document analysis with Value Consult Cold Chain Consultants and Fresh Factory Operational Cooperation Partners (KSO) to obtain primary and secondary data.

Data Analysis Techniques with Data Collection Data Reduction Data Presentation (Miles and Huberman Model: 2014)

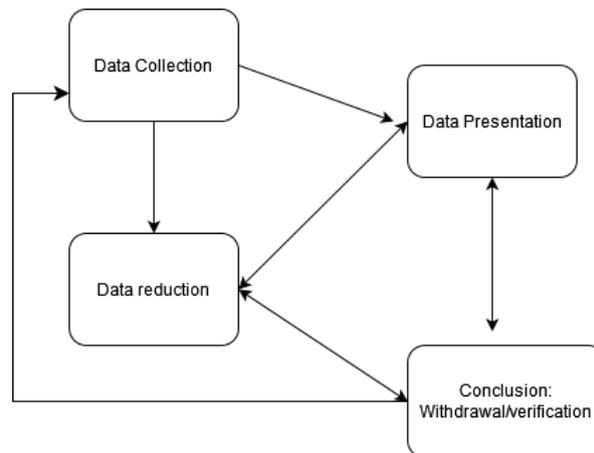


Figure 6: Data Analysis Techniques

Conceptual research model in collecting primary and secondary data to obtain information as a basis for determining alternative options for cooperation in cold warehouse operations and standard operational procedures in the process of handling frozen products and cold warehouse maintenance as follows:

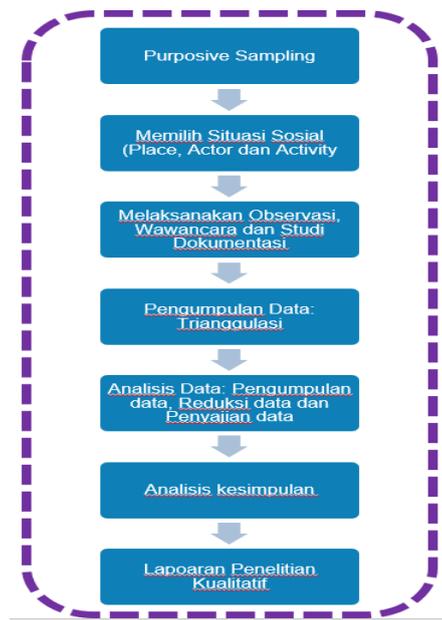
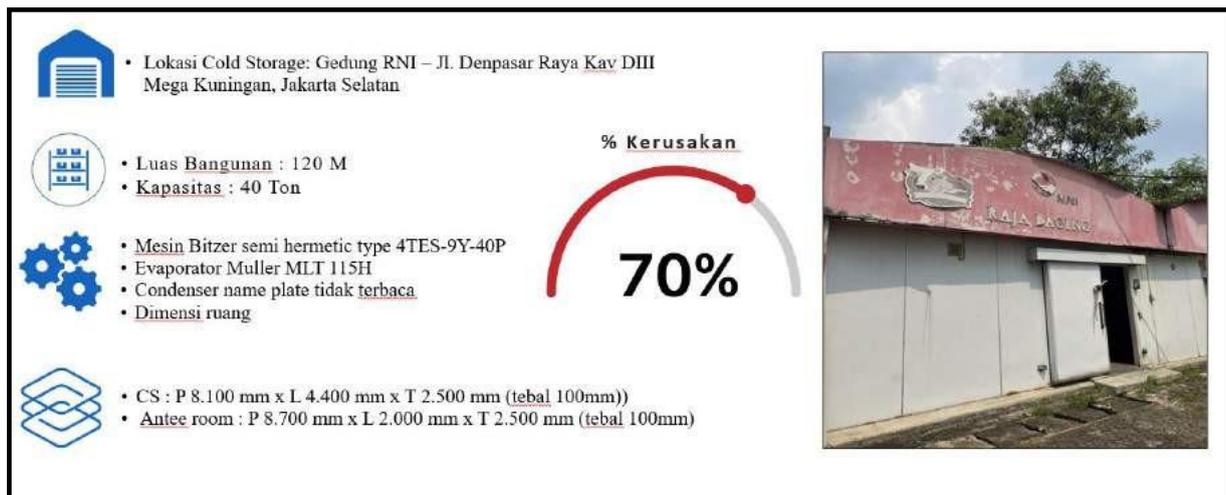


Figure 7: Conceptual Research Model

Results and Discussion

Interviews and observations of cold warehouse infrastructure were carried out in February 2024 involving Value Consult Cold Chain Consultants and Assistant Cold Warehouse Manager ID FOOD with the following conditions:

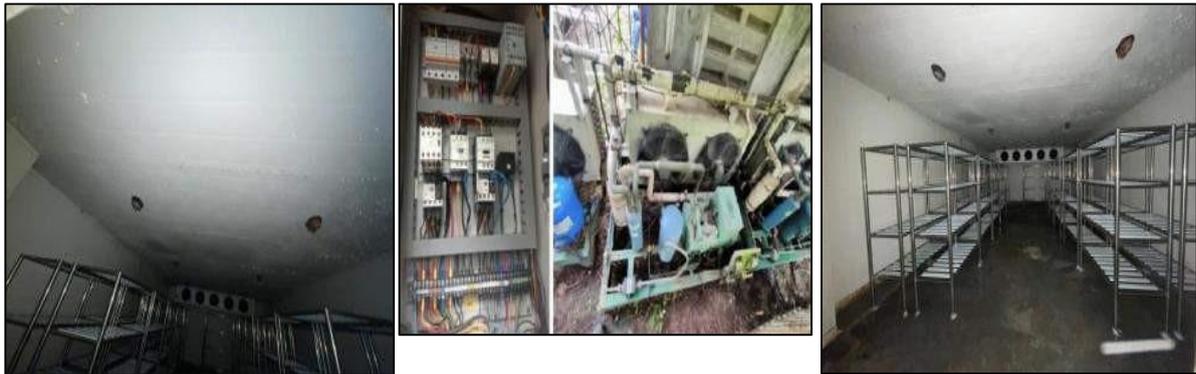


Source: Value Consult Observation Results, 2024.

Figure 8: General condition of the ID FOOD Mega Kuningan cold warehouse

For more specific conditions in the two cold warehouse rooms, cooling machines, anterooms and electricity as follows:

1. Cold Warehouse Room I



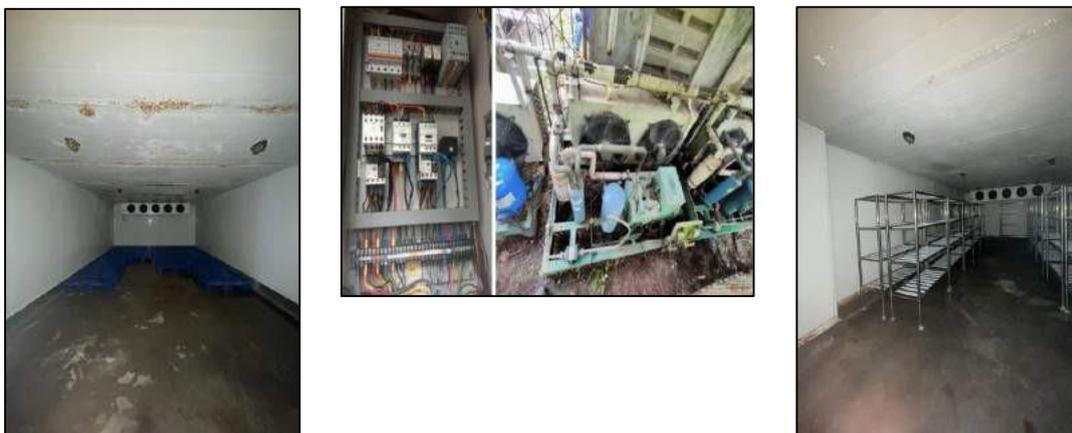
Source: Value Consult Observation Results, 2024.

Figure 9: Condition of Cold Warehouse I ID FOOD Mega Kuningan

Based on the results of observations, there are the following conditions:

- a. The old unit has not been used for 10 years, the freon pressure is still there but it is minimal
- b. The evaporator fan is partially on but not optimal
- c. The position of the condenser is too narrow against the wall
- d. The piping system does not yet have a trap / trapolie
- e. There are several parts on the controller panel that don't work
- f. The sandwich panel / room is still usable with a little mold and rust
- g. Freon R404A

2. Cold Warehouse Room II



Source: Value Consult Observation Results, 2024.

Figure 10: Condition of Cold Warehouse II ID FOOD Mega Kuningan

Based on the results of observations, there are the following conditions:

- a. The old unit has not been used for 10 years, the freon pressure is still there but it is minimal

- b. The evaporator fan turns on partially but is no longer optimal b. The position of the condenser is too close to the wall
- c. The piping system does not yet have a trap / trapolie
- d. There are several parts on the controller panel that don't work
- e. The sandwich panels, especially the ceiling, are saturated/full of water because the building roof is leaking
- f. Freon R404A

3. Anteroom or Precolling Room



Source: Value Consult Observation Results, 2024.

Figure 11: Condition of the Anteroom ID FOOD Mega Kuningan

Based on the results of observations, there are the following conditions:

- a. The old unit has not been used for 10 years, the freon pressure is still there but it is minimal
- b. The evaporator fan can turn on but the sound is rough and the amperage is high
- c. The piping system does not yet have an oil trap
- d. There are several parts on the controller panel that don't work
- e. The sandwich panel/room is still suitable for use but is moldy and rusty
- f. Freon R404A

4. Electricity



Source: Value Consult Observation Results, 2024.

Figure 12: Electrical Condition of ID FOOD Mega Kuningan Cold Warehouse

Based on the results of observations, there is a condition where the electricity and generator are still connected to the ID FOOD office building and the condition of 40% of the panels is damaged and rusty, making it a potential fire risk and hazard.

5. Standard Operating Procedures (SOP)

The current condition is that there is no SOP in the ID FOOD Mega Kuningan Cold Warehouse which uses a product balance system with manual recording for beef sales needs and was last used in 2014.

Not having a Standard Operating Procedure (SOP) for the cold chain can have several detrimental impacts, especially in industries that depend on the storage and distribution of products that require controlled temperatures. The following are some of the consequences of not having a Cold Chain SOP:

- a) **Product damage:** Without clear SOPs for managing the cold chain, products that require controlled temperatures may experience damage or spoilage due to unstable or too high temperatures. This can result in financial losses because the product cannot be sold or must be thrown away.
- b) **Deterioration of product quality:** Uncontrolled temperature changes in the cold chain can affect product quality. For example, frozen foods can freeze unevenly, which can affect texture and taste.
- c) **Public health risk:** Food products that are not stored at the right temperature can become a breeding ground for harmful bacteria and microorganisms. Consumption of these contaminated products may cause illness or infection in customers, which could lead to serious public health problems.
- d) **Regulatory violations:** Not having adequate SOPs can lead to regulatory violations and may result in legal sanctions, fines, or business closure.
- e) **Loss of customer trust:** If a company consistently fails to maintain proper temperatures for its products, this can lead to loss of customer trust.

To avoid these negative consequences, it is important to have clear and documented SOPs for managing the cold chain. These SOPs should include procedures for temperature monitoring, equipment maintenance, corrective action in case of disruption, employee training, and all other aspects of cold chain management. By implementing appropriate SOPs, companies can ensure the safety, quality and sustainability of the cold chain.

Discussion

With the condition of the ID FOOD Mega Kuningan Cold Warehouse, there is 70% damage based on the results of observations and interviews that have been carried out, there are considerations for operational options as in the following table:

Table 1: ID FOOD Mega Kuningan Cold Warehouse Operational Options

No	Important Elements	Construction of a New Cold Warehouse	Cold Warehouse Repair	Cold Warehouse Operation Cooperation
1	Technology	Adopt the latest technology in cold storage. This can improve storage efficiency, security and quality.	The technology is outdated, and repairs may not be sufficient to fix the fundamental problem	Adopt the latest technology in cold storage. This can improve storage efficiency, security and quality.
2	Investment Costs	High investment costs, including land purchase, construction, and equipment installation. This can be a significant initial financial burden	More economical than building new, especially if the basic structure is still usable	The investment costs for replacing equipment and repairing cold warehouses and buildings are carried out by the cooperation partners
3	Time	The process of planning, licensing and building a new cold warehouse takes quite a long time. This can be a challenge if a company needs a fast storage solution	Requires less time compared to new builds, allowing companies to quickly meet storage needs	Time efficiency for installation of new cold warehouse equipment and light repairs to buildings
4	Capacity	designed with larger capacities to accommodate business growth or increased market demand	Optimize capacity and space efficiency without having to build from scratch	Optimize capacity and space efficiency without having to build from scratch
5	System Integration	Difficulty in integrating systems and processes with existing infrastructure, especially if there are major changes in operational scale	Easier system integration with existing infrastructure	Easier system integration with existing infrastructure
6	Design	Can design facilities according to the specific needs of the company or products stored, thereby maximizing space and operational efficiency	Capacity is limited and cannot be upgraded, repair may not be sufficient to meet future needs	Repair of cold warehouse buildings and changes to product process flow layout according to current needs
7	Energy Efficiency	More energy efficient, helping to reduce long-term operational costs and environmental impact.	Requires higher operational costs due to low energy efficiency and higher probability of equipment failure	More energy efficient, helping to reduce long-term operational costs and environmental impact.

Source: Observation and Interview Results, 2024.

Based on the options in the operational options table for the ID FOOD Mega Kuningan Cold Warehouse, with the current conditions being that there is no budget for 2024 for repairs and construction of a new cold warehouse, the operational option for operational collaboration with the cold chain company partner Fresh Factory is the right choice with the following collaboration scheme:

- a. The costs of building repairs, new cold storage equipment and permits are borne by the cooperation partner
- b. Sharing knowledge and systems
- c. HR training in the cold chain field
- d. Profit Sharing product storage and fulfillment:

Table 2: ID FOOD Mega Kuningan Cold Warehouse Operation Cooperation

Requirement	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
	50%	75%	75%	100%	100%
Available Space (m2)	82	82	82	82	82
# Available Frozen Space	82	82	82	82	82
Total Pallet Available	48	48	48	48	48
# of Available Cold Pallet	48	48	48	48	48
# of Available Dry Pallet					
Total Pallet Terpakai	24	36	36	48	48
# of Available Cold Pallet	24	36	36	48	48
No of tenants	1	2	2	3	3
Estimated	2.332.800.000	3.499.200.000	3.499.200.000	4.665.600.000	4.665.600.000
Revenue	233.280.000	349.920.000	349.920.000	466.560.000	466.560.000
Storage	129.600.000	194.400.000	194.400.000	259.200.000	259.200.000
Fulfillment	103.680.000	155.520.000	155.520.000	207.360.000	207.360.000
Cost	-314.237.760	-323.503.440	-323.824.740	-341.761.785	-341.761.785
Rental Land	-19.680.000	-19.680.000	-19.680.000	-19.680.000	-19.680.000
Warehouse Insurance					
Renovasi					
Electricity	-51.840.000	-51.840.000	-51.840.000	-51.840.000	-51.840.000
Utilities (PAM,IPL)	-6.000.000	-6.300.000	-6.615.000	-6.945.750	-6.945.750
LM & LS (Logistic Manager & Logistic Staff)	-122.400.000	-122.400.000	-122.400.000	-122.400.000	-122.400.000
Maintanance Cold Storage	-60.000.000	-60.000.000	-60.000.000	-60.000.000	-60.000.000
Reserve Cost	-5.198.400	-5.204.400	-5.210.700	-5.217.315	-5.217.315
Inventory Insurance	-639.360	-959.040	-959.040	-1.278.720	-1.278.720
Racking & Pallet	-5.280.000	-5.280.000	-5.280.000	-5.280.000	-5.280.000
System Cost	-25.920.000	-25.920.000	-25.920.000	-34.560.000	-34.560.000
Packaging Material	-17.280.000	-25.920.000	-25.920.000	-34.560.000	-34.560.000
Gross Margin	-80.957.760	26.416.560	26.095.260	124.798.215	124.798.215
<i>Gross Margin %</i>	<i>-35%</i>	<i>8%</i>	<i>7%</i>	<i>27%</i>	<i>27%</i>
Operation Expenses (OPEX)	-12.000.000	-12.000.000	-12.000.000	-12.000.000	-12.000.000
Management & Others (Marketi	-12.000.000	-12.000.000	-12.000.000	-12.000.000	-12.000.000
EBITDA	-92.957.760	14.416.560	14.095.260	112.798.215	112.798.215
<i>EBITDA %</i>	<i>-40%</i>	<i>4%</i>	<i>4%</i>	<i>24%</i>	<i>24%</i>
For Partner ID Food					
Total Revenue share	47.952.000	71.928.000	71.928.000	95.904.000	95.904.000
Storage (25%)	32.400.000	48.600.000	48.600.000	64.800.000	64.800.000
Fulfillment (15%)	15.552.000	23.328.000	23.328.000	31.104.000	31.104.000
CoS	-71.520.000	-71.520.000	-71.520.000	-71.520.000	-71.520.000
Simulation Profit	(23.568.000)	408.000	408.000	24.384.000	24.384.000
Revenue Share (Perbulan)	3.996.000	5.994.000	5.994.000	7.992.000	7.992.000

Sumber: Pengajuan Mitra Kerjasama *Fresh Factory*, 2024.

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