

Pre-Feasibility Study

REFRIGERATED TRANSPORTATION



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1. DISCLAIMER

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2. EXECUTIVE SUMMARY

Refrigerated Transportation is a temperature-controlled transportation service. It is a modern technique to transport perishable and temperature sensitive goods, such as meat, fish, fruits and vegetables, medicines, vaccines, dairy products, frozen food, etc. in a refrigerated container. Refrigerated Transportation Services have gained popularity around the world in recent years and offer their customers (businesses, households, general public, etc.) effective ways to deliver fresh products both nationally and across the world.

This “Pre-feasibility Document” provides details for setting up a business of “Refrigerated Transportation Services”. The proposed logistics services business is aimed at serving FMCG¹, Pharmaceutical and healthcare companies, entities involved in business of fruits and vegetables, dairy products, meat and others involved in trading of temperature sensitive products. The proposed business will provide temperature-controlled logistics services within a city, in an area of 50-60 kilometers radius; using one refrigerated vehicle. The service model works on a sequential pattern starting from the time when a client approaches the service provider and completing when the cargo is delivered at the desired destination.

The Refrigerated Transportation Services ensures that the cargo remains stored and preserved in a safe condition, at the required temperatures, so that it may maintain its quality till it gets delivered at the desired destination. Failing to keep the products at the required temperatures can result in initiating the process of decay due to microbial growth; which can lead to rotting, degradation or discoloring of the products. Increasing awareness about healthy and hygienic food and growing demand for fresh fruits, vegetables, fish, meat and other perishable food products creates a market for the proposed project.

For the purpose of this study, it has been assumed that the business will be started with one Reefer (a special vehicle used to transport temperature sensitive products) having container dimensions of 168’x74’x82’, attached with a truck having engine capacity of 2,771cc that will transport frozen food² items within a city, in an area of 50-60 kilometers radius. The service may be provided within a city or inter-city.

The logistics services business is proposed to be ideally located in large cities like Karachi, Lahore, Faisalabad, etc. or medium cities like Peshawar, Rawalpindi, Quetta, Gujranwala, Sialkot, Sukkur, Multan, Hyderabad, Mardan, etc.

The proposed business is assumed to make 1,120 deliveries in a year. During the first year of operations, it is assumed that the project will operate at 60% of its total transportation capacity, which is equal to 672 deliveries. The service capacity utilization is assumed to increase at a rate of 10% per annum to reach the maximum

¹ Fast Moving Consumer Goods are products, usually of everyday use, that are high in-demand and are sold quickly.

² According to Merriam-Webster dictionary items that has been subjected to rapid freezing and are kept frozen until used are frozen foods.

90% capacity in the 4th year of operations. Steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business.

The proposed project will be set up in a rented building having an area of 456 sq. ft. The project requires a total investment of PKR 6.37 million. This includes capital investment of PKR 5.76 million and working capital of PKR 0.61 million. This project will be established using 100% equity. The Net Present Value (NPV) of project is PKR 19.47 million with an Internal Rate of Return (IRR) of 57% and a Payback period of 2.29 years. Further, the proposed project is expected to generate Gross Annual Revenues of PKR 8.06 million in 1st year after coming into operations, Gross Profit (GP) ratio ranging from 46% to 62% and Net Profit (NP) ratio ranging from 11% to 39% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 44% (488 deliveries) with breakeven revenue of PKR 5.86 million.

The proposed project may also be established using leveraged financing. At 50% financing at a cost of KIBOR+3%, the proposed project provides Net Present Value (NPV) of PKR 22.22million, Internal Rate of Return (IRR) of 57% and Payback period of 2.27 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 7% to 39% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 50% (556 deliveries) with breakeven revenue of PKR 6.67 million.

The proposed project will provide employment opportunities to 4 to 6 persons. The legal business status of this project is proposed as "Sole Proprietorship".

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with the objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectorial research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in establishing a business providing Refrigerated Transportation Services, by providing a general understanding of the business with the intention of supporting them in investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & SERVICES

This document provides details for setting up a business of "Refrigerated Transportation Services" which will provide services as a third party to transport perishable and temperature sensitive goods, such as meat, fish, fruits and vegetables, medicines, vaccines, dairy products, frozen food, etc. The potential target customers for this project are cold storages, food and pharmaceutical industry, Fast Moving Consumer Goods (FMCG) sector and any other businesses dealing in temperature sensitive products. The services do not include providing cold storage facilities.

Reefer is a truck/vehicle specifically used to transport temperature sensitive items. It comprises of a vehicle/truck which is used for movement and an insulated container

which is used to store the products at low temperatures to maintain their quality during transportation. Figure 1 shows a vehicle without an insulated container.

Figure 1: Vehicle without Insulated Container



Insulated container is built according to the vehicle's dimensions and the engine capacity and is fixed on the chassis of the vehicle. Figure 2 shows a fully assembled vehicle.

Figure 2: Vehicle with Insulated Container



The study has been carried out assuming one reefer truck with a diesel engine of 2,771cc displacement and payload capacity of 3,350 kilograms; equipped with an insulated container of external dimensions 168'x74'x82' (length x width x height); with a loading capacity of 3 tons. Further assumptions regarding products to be transported and the related requirements are given in Table 1.

Table 1: Product and Related Assumptions

Particulars	Assumptions/ Requirements
Average distance per delivery (km)	100
Product	Frozen Food
Weight of Product to be loaded (ton)	3
Temperature to be maintained (Figure 5)	-18 °C

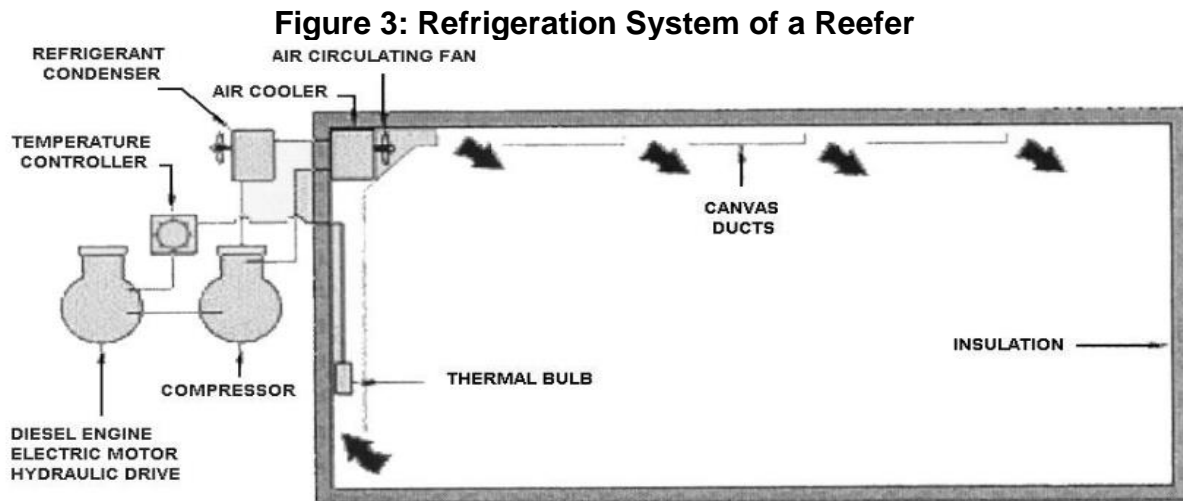
According to Merriam-Webster dictionary, frozen food is the food that has been subjected to rapid freezing and is kept frozen until used. There are a variety of products included in frozen food, in terms of products and their state i.e., uncooked or ready to cook items. Uncooked food includes chicken meat (chopped and un chopped), fish products (Molluses, Crustaceans). Ready to cook food items include Alu paratha, Chicken paratha, Alu samosa, Bahari kabab, Chapli kebab, Chicken cheese hearts, Chicken crispy fillet, Chicken kofta, Nuggets, Desserts, etc. Ice cream is also included as a frozen food.

The logistics services business will be started in a rented office to reduce capital cost. The major cost of the project will include cost of Reefer (Cargo moving Truck/ Van and the refrigerated container), office equipment and furniture & fixtures. The proposed business is assumed to operate in 2 shifts for 24 hours a day and 280 days a year.

This project mainly focuses on the potential investment opportunity in the refrigerated transportation sector. The success of proposed business depends upon cargo delivery in a safe and sound condition by keeping the temperatures within the required range during the entire time. Any change in temperature can result in irrevocable and costly damage to the product due to which it may lose its entire market value or utility.

5.1. Refrigeration System

Refrigerated Container or Reefer is a temperature-controlled van, truck or a trailer. These are specially designed and insulated vehicles having a refrigeration system. A reefer is, therefore, able to keep the shipment temperature cool. Figure 3: shows refrigeration system of a reefer.



Components of a Reefer Refrigeration system

Refrigeration systems work to remove heat from the refrigerated van, truck or trailer to achieve the required low temperature before the product is loaded. The system has to maintain the desired temperature level during the entire period of transportation.

Every reefer refrigeration system has the same basic components. They maintain a constant temperature that preserves the items being transported by working together. Key components of a refrigeration system are described below:

Compressor

A refrigeration compressor draws refrigerant (a compound, either liquid or gas, used to absorb heat from the compartment) from the evaporator at a relatively low pressure, compresses it and then discharges it to the condenser at a high pressure.

Condenser

The condenser receives high-pressure refrigerant from the compressor and converts it to liquid by transferring out heat by condensing.

Evaporator

The evaporator works the opposite of the condenser; here the refrigerant liquid is converted back to gas, absorbing heat from the air in the compartment and cooling the compartment during this process.

Air/Canvas Ducts

The air ducts circulate the air and provides ventilation that keeps air moving throughout the unit.

The cooling system of a reefer will have to be maintained properly to ensure its efficient working. Figure 4 and Figure 5 show temperature conditions for transporting frozen and chilled food products as prescribed in "Agreement on the International

Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)³ as amended on 6th July 2020.

Figure 4: Temperature Requirements for Quick/Deep - Frozen Products

Ice cream	-20 °C
Frozen or quick (deep)-frozen fish, fish products, molluscs and crustaceans and all other quick (deep)-frozen foodstuffs	-18 °C
All other frozen foodstuffs (except butter)	-12 °C
Butter	-10 °C
Deep-frozen and frozen foodstuffs mentioned below to be immediately further processed at destination: ¹	
Butter	
Concentrated fruit juice	

¹ *The deep-frozen and frozen foodstuffs listed, when intended for immediate further processing at destination, may be permitted gradually to rise in temperature during carriage so as to arrive at their destination at temperatures no higher than those specified by the sender and indicated in the transport contract. This temperature should not be higher than the maximum temperature authorized for the same foodstuff when refrigerated as mentioned in annex 3. The transport document shall state the name of the foodstuff, whether it is deep-frozen or frozen and that it is immediately to be further processed at destination. This carriage shall be undertaken with ATP-approved equipment without use of a thermal appliance to increase the temperature of the foodstuffs.*

Figure 5: Temperature Requirement for Chilled Food

	<i>Maximum temperature</i>
I. Raw milk ¹	+ 6 °C
II. Red meat ² and large game (other than red offal)	+ 7 °C
III. Meat products, ³ pasteurized milk, butter, fresh dairy products (yoghurt, kefir, cream and fresh cheese ⁴), ready cooked foodstuffs (meat, fish, vegetables), ready to eat prepared raw vegetables and vegetable products ⁵ , concentrated fruit juice and fish products ³ not listed below	Either at + 6 °C or at temperature indicated on the label and/or on the transport documents
IV. Game (other than large game), poultry ² and rabbits	+ 4 °C
V. Red offal ²	+ 3 °C
VI. Minced meat ²	Either at +2 °C or at temperature indicated on the label and/or on the transport documents
VII Untreated fish, molluscs and crustaceans ⁶	On melting ice or at temperature of melting ice

¹ *When milk is collected from the farm for immediate processing, the temperature may rise during carriage to +10 °C.*

² *Any preparations thereof.*

³ *Except for products fully treated by salting, smoking, drying or sterilization.*

⁴ *"Fresh cheese" means a non-ripened (non-matured) cheese which is ready for consumption shortly after manufacturing and which has a limited conservation period.*

⁵ *Raw vegetables which have been diced, sliced or otherwise size reduced, but excluding those which have only been washed, peeled or simply cut in half.*

⁶ *Except for live fish, live molluscs and live crustaceans.*

³<https://unece.org/text-and-status-agreement>

5.2. Installed and Operational Capacities

The project's capacity has been based on the number of deliveries made in a day. Based on the assumed distance of 100 kilometers per delivery, the proposed "Refrigerated Transportation Services" will have maximum service capacity of doing 1,120 deliveries in a year. It is assumed to operate at 60% capacity (672 deliveries) in the first year of operations. The operational capacity will increase at the rate of 10% per annum and it is expected to achieve its maximum capacity of 90% during 4th year after commencement of operations. Table 2 shows details of maximum annual capacity and operational capacity utilized during first year of operations.

Table 2: Service and Operational Capacity

No of Vehicles	Deliveries per day ⁴	Total Service Capacity/ Year (Deliveries) @280 days	Initial Operational Capacity @ 60% (Deliveries)
1	4	1,120	672

Deliveries per day have been calculated by taking assumptions as shown in Table 3.

Table 3: Assumptions for Capacity Calculation

Activity	Time Consumption, Distance
Loading (hours)	1
Unloading (hours)	1
Travel (hours) - (D/C)	2
Total - (A)	4
Working Hours - (B)	16
Deliveries Per Day - (B/A)	4
Average Speed (km/h) – C	50-60
Distance per shipment (km) – D	100

6. CRITICAL FACTORS

Before making the decision to invest in Refrigerated Transportation Services, careful analysis of the associated risk factors is required. Following factors are to be considered:

- Use of adequate modern technology (latest vehicles and refrigeration/ cooling system)
- Tracking and tracing system to ensure smooth delivery of cargo to destination

⁴ Deliveries per day = hours available per day / time required for one shipment

- Ensuring maintenance of required temperature levels from start to finish of the journey
- Installation of data loggers (an electronic device used to record changes in temperature) to monitor temperatures
- Training the personnel involved in moving and handling cargo
- Minimizing the time, it takes for the customers to receive their goods; as it has a direct impact on the reputation of the service provider
- The quality of service is directly linked with its reliability of delivery; from order processing to delivery time and the way complaints and feedbacks are handled. This is important for customers' retention and attracting new customers.

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The metropolitan cities of Karachi, Lahore, Islamabad, Quetta, and Peshawar have the potential for investment in the business of Refrigerated Transportation. The provincial capitals are considered hubs of financial and business activities and thus offer attractive investment opportunities.

Sialkot and Faisalabad are other metropolitan cities that have significant potential for investment because these are considered centers of industrial activities.

Gwadar being the hub for port activities, where millions of tons of cargo is handled on daily basis, is the most attractive location for such an investment. Due to unavailability of refrigerated logistics services in Gilgit-Baltistan, a large share of fruits and other perishable goods are spoiled before reaching the markets in Punjab, Sindh and other provinces. The investment potential to transport these goods from Gilgit-Baltistan is still untapped.

8. POTENTIAL TARGET MARKETS

The strategic, tactical and operational supply chain management is very important in today's competitive environment. It is vital to maximize the value generated by the organization, satisfying customer demands while also minimizing cost and maximizing profitability. The alignment of procurement, production/manufacturing and supply roles need to be determined and fully understood by companies in order to be able to achieve competitive advantage and other business benefits. Moreover, cost control plays an important part. Therefore, companies look towards service delivery companies for outsourcing their logistics needs. This helps them reduce their investment in capital assets as well as in human resources.

The potential target markets include the industries dealing in:

- Fruits and vegetables

- Dairy products
- Ice cream and other confectionery items
- Pharmaceutical products
- Meat based products (raw/ processed/ cooked/ chicken/ beef/ mutton)
- Seafood

As per Pakistan Pharmaceutical Manufacturers Association's (PPMA)⁵ industry report, pharmaceutical industry of Pakistan had a worth of USD 3.2 billion in 2017, with a growth rate of 15% annually. There are more than 700 pharmaceutical manufacturing units in Pakistan.

Pakistani frozen food market is growing at a CAGR of 5.8% during the forecast period (2020-2025)⁶. The frozen food market in Pakistan is preliminarily driven by the convenience factor and the rising demand for animal-based products, such as kebab, parathas, meatballs, sausages, etc. Meanwhile, lack of infrastructure, in terms of efficient refrigerated logistic services and retail-level inefficiencies, is considered a major hurdle for the frozen food industry in Pakistan.

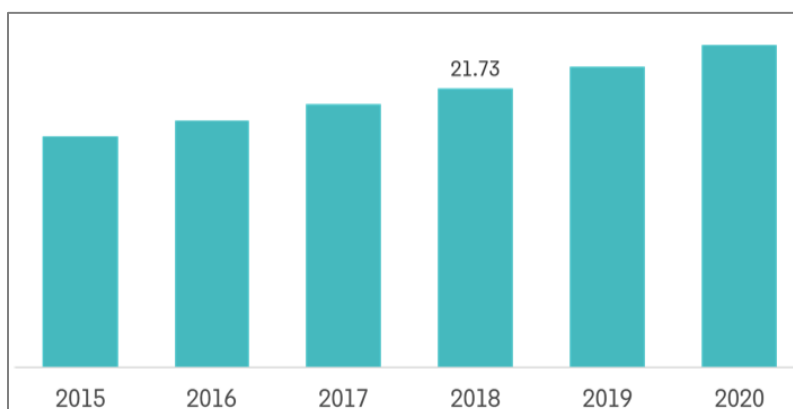
Robust demand for convenience food in Pakistan has increased, due to major factors, such as growing urbanization, time-pressed schedules, and women joining the workforce. Urban consumers of Pakistan have shown greater interest in products offering greater convenience against higher prices. Thus, the growing preference for convenience over the price is a major driving factor for the growth of frozen foods in Pakistan.

The process of economic empowerment has given rise to an affluent middle class, particularly in the metropolitan areas of Pakistan, such as Karachi, Lahore, Faisalabad, Islamabad, and Rawalpindi. The convenience factor associated with frozen products is poised to create significant impact spanning different sectors of processed foods and agricultural commodities in Pakistan.

Frozen ready-to-eat meals are a convenient alternative to cooking and are being increasingly preferred by the growing working population in the country. In order to gain consumer's interest by targeting religious beliefs, companies like PK foods, National Foods, and UK Frozen foods, are positioning their frozen ready meal products with claims, such as halal-certified. Another perk associated with frozen meals is that they are free from microbial attacks, thus, becoming an attractive alternative among consumers, boosting sales of the segment. Furthermore, the growing concerns about obesity and other lifestyle-related diseases have urged consumers to pay close attention to nutritional labeling, leading manufacturers to introduce meals with value-added nutrients and claims, such as fewer preservatives, less fat, etc.

⁵ <https://www.ppma.org.pk/pharma-industry-report/>

⁶ <https://www.mordorintelligence.com/industry-reports/pakistan-frozen-food-market>

Figure 6: Frozen Meal Market Revenue (Million USD)⁷

The above-mentioned analysis shows that there is strong demand for frozen food in Pakistan but lack of efficient refrigerated transportation services is considered as a major hurdle for the frozen food industry in Pakistan. This gap between supply and demand creates a good opportunity for potential investors to invest in this sector as the market trends are promising and are expected to rise in the coming years.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the Refrigerated Transportation Services. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cost of Goods Sold, Cash Flow Statement and Balance Sheet are attached as Annexure.

9.1. Project Economics

All the figures in this financial model have been calculated after carefully taking into account the relevant assumptions and target market.

9.1.1. Financial Feasibility Analysis

The financial feasibility analysis given in Table 4 provides the information regarding projected IRR, NPV and payback period of the study based on 100% equity.

Table 4: Financial Feasibility Analysis

Description	Values
IRR	57%
NPV (PKR)	19,468,681
Payback Period (years)	2.29
Projection Years	10

⁷ <https://www.mordorintelligence.com/industry-reports/pakistan-frozen-food-market>

Discount Rate used for NPV	15%
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9.1.2. Financial Feasibility Debt Financing

The financial feasibility analysis given is shown in table. Table 5 provides the information regarding projected IRR, NPV and payback period of the study based on combination of equity (50%) and debt (50%) financing for the proposed project.

Table 5: Financial Feasibility Debt Financing

Description	Project
IRR	57%
NPV (PKR)	22,218,233
Payback Period (years)	2.27
Projection Years	10
Discount Rate used for NPV	13%

9.2. Project Cost

Total investment cost of the project has been calculated to be PKR 6.3 million. The project will be financed through 100% Equity. Table 6 provides the detail of cost calculated for the proposed manufacturing unit.

Table 6: Project Cost

Description	Cost
Land	
Building/Infrastructure	51,840
Furniture & fixtures	130,000
Reefer Trucks	5,174,000
Office equipment	245,000
Pre-operating costs	25,000
Security Against Building	136,800
Total Capital Costs	5,762,640
Working Capital	
Upfront building rent	45,600
Upfront insurance payment	310,440
Cash	250,000
Working Capital Requirement	606,040

Total Project Cost	6,368,680
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9.2.1. Land

The Refrigerated Transportation business will be established in a rented building, having an area of 456 sq. ft., to avoid the high cost of land. Suitable buildings for setting up a service providing business like this can be easily found on rent. Therefore, no land cost has been added to the project cost. Breakup of the space requirement is provided in Table 7.

Table 7: Breakup of Space Requirement

Description	% Break-Up	Area Sq. Ft.
Executive Office	26%	120
Washrooms	8%	36
Parking	66%	300
Total Area	100%	456

9.2.2. Building

The business will be set up in a rented building of 456 sq. ft. It is proposed to have a commercial electricity connection with load up to 2 KW (A2a). There will be no cost of building construction; however, building renovation and interior decoration cost is included in the capital investment. Building rent is included in the operating cost. Table 8 provides details of building construction cost.

Table 8: Building Renovation Cost

Cost Item	Unit of Measurement	Total Liter / Area / Number	Cost/Unit/ Sq.feet (PKR)	Total Cost (PKR)
Paint Cost	Ltr	17	500	8,400
Labour Cost	Sq. Feet	1,680	8	13,440
Wall Racks	Units	2	15,000	30,000
Total				51,840

9.2.3. Furniture & Fixtures

Table 9 provides details of the furniture and fixture requirement of the project.

Table 9: Furniture and Fixtures

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Executive Tables	1	30,000	30,000
Executive Chairs	1	20,000	20,000
Visitors Chairs	4	10,000	40,000
Sofa Set	1	40,000	40,000
Total			130,000

9.2.4. Office Equipment

Details of office equipment required for the project are provided in Table 10.

Table 10: Office Equipment

Cost Item	No.	Unit Cost (PKR)	Total Cost (PKR)
Printers	1	40,000	40,000
Desktop Computer	1	30,000	30,000
Security System (4 Cameras 2MP)	4	2,000	8,000
DVR	1	12,000	12,000
LED	1	40,000	40,000
Air Conditioners (1.5 ton Inverter)	1	90,000	90,000
Water Dispensers	1	20,000	20,000
Wi-Fi / Internet Routers	1	5,000	5,000
Total	10		245,000

9.2.5. Office Vehicle Requirement

Detail of office vehicle required for the project is provided in Table 11.

Table 11: Office Vehicle Requirement

Cost Item	Number of Vehicles	Unit Cost (PKR)	Registration Charges
Mini Truck (2771 cc)	1	3,400,000	3,400,000
Registration Charges		4%	136,000
Insulated Container (14'x6.16'X6.83')	1	1,740,000	1,740,000
Total			5,276,000

Table 12: Specifications of Vehicle

Weight and Capacities	SWB	Engine Model	4JB1
Gross Vehicle (KG)	5100	Type	Diesel Engine, 4-cylinder, OHV, Direct Injection, Water cooled
Chassis Weight (KG)	1750	Displacement	2771 cc
Pay Load (KG)	3350	Max Output (ps)(kw)/ Rpm	(80 ps) (59 kw) / 3600rpm
Fuel Tank (Liter)	75	Max Torque (kgm)(N.m)/ Rpm	(17.8 kgm) (175 N.m) / 2000rpm,

Figure 7: Specifications of Insulated Container

Dimensions:	External: 14' x 74" x 82"
Temp:	-30°C
Construction:	Ring type steel frame structure, mounted on an under frame as a structural member. Inner and outer frames separated with insulators.
Lining:	External: Roof, front, back, sides walls are pre-painted galvanized steel sheets and bottom of the floor are lined with heavy gauge galvanized steel sheet. Internal: Roof and side walls are lined with pre-painted galvanized steel sheets. Floor lined with aluminum T-section.
Insulation:	6" inches thick polyurethane foam injected under pressure without thermal bridges.
Door:	One back & one side door will be provided, G.R.P. moulded frame, sealing and container type locking system.

9.2.6. Security against Building

Detail of security against building is provided in Table 13.

Table 13: Security against Building

Description	No of Months	Per month rent	Total
Security against Building	3	45,600	136,800

9.2.7. Pre-operating Cost

Detail of pre-operating cost for the purposed project is shown in Table 14.

Table 14: Pre-operating

Description	No. of Month	Months Before Operating	Total
Administration expenses	1	1	20,000
Utilities	1		5,000
Total			25,000

Administration expenses include salary of the office boy; the owner does not draw salary. He will get dividends/profits from business.

9.3. Breakeven Analysis

Breakeven analysis is provided in Table 15.

Table 15: Breakeven Analysis

Particulars	Amount First Year (PKR)	Ratios
Sales	8,064,000	100%
Variable Cost	4,498,858	56%
Contribution	3,565,142	44%
Fixed Cost	2,589,379	32%
Breakeven		
Breakeven Deliveries		488
Breakeven Revenue		5,856,920
Breakeven Capacity		44%

9.4. Revenue Generation

Based on the 60% capacity utilization of the business, estimated revenue during the first year of operations is given in Table 16.

Table 16: Revenue Generation

No of Deliveries (A)	Moving Charges per Delivery (B)	Revenue (PKR) (A*B)
672	12,000	8,064,000

For number of deliveries please refer Table 2.

9.5. Variable Cost Estimate

Variable costs of the project have been provided in detail in Table 17.

Table 17: Variable Cost Estimate

Description	Cost
Labour	1,440,000
Fuel Cost	1,276,800
Refrigeration cost	1,225,728
Vehicle maintenance and toll cost (Table 20)	395,050
Communications expense (phone, mail, internet, etc.)	161,280
Total Variable Cost	4,498,858

Table 18: Fuel Cost

Particulars	Rate, No, Amount
No of Vehicles – A	1
Mileage/Liter (km) – B	6
Fuel Cost/Liter (PKR) – C	114
Average Distance per delivery (km) –D	100
Fuel Consumption per delivery (Liters) – E=D/B	16.67
Cost per delivery – F=CxE	1,900
No of deliveries – G	672
Fuel Cost (A*F*G)	1,276,800

Table 19: Refrigeration Cost

Particulars	Rate, No, Amount
Fuel Consumption per hr/ vehicle (Liters) - A	4
No of Vehicles – B	1
Time Consumed per Delivery (hours) – C	4
Fuel Consumption per delivery (Liters) – D= A*C	16
Fuel Charges/Liter (PKR) – E	114
Cost per delivery – F=D*E	1,824
No of deliveries – G	672
Refrigeration Cost (B*F*G)	1,225,728

Explanation: Fuel consumption for refrigeration may vary on the basis of product's volume to be loaded. i.e., a fully loaded container might consume more fuel for maintaining required temperature than a half-loaded container.

Table 20: Vehicle Maintenance and Toll Cost

Particulars	Amount (PKR)
Toll Tax per Delivery/ vehicle (A)	250
Engine Oil Charges (B)	850
No of Vehicles (C)	1
No of Deliveries (D)	672
Monthly General Maintenance Cost (E)	10,000
Refrigeration System Maintenance (F)	8,000
Oil Change Interval (KMs) (G)	5,000
Average Distance per Delivery (KMs) (H)	100
Distance Covered per truck (KMs) I = (D*H)/C	67,200
No of Intervals J=(I/G)	13
Engine Oil Charges K=(J*B)	11,050
General Maintenance L=(E*12)	120,000
Refrigeration Maintenance M=(F*12)	96,000
Toll/Octroi N=(A*D)	168,000
Total Maintenance/ toll Cost (K+L+M+N)	395,050

Table 21: Variable Cost Assumptions

Description	Assumption
Reefer Mileage (Km/liter)	6
Fuel consumption for refrigeration per hour (liter)	4
Communications expense (phone, mail, internet, etc.)	2% of revenue
Office vehicles running expense	3% of revenue
Office expenses (stationery, entertainment, janitorial services, etc.)	3% of revenue

9.6. Fixed Cost Estimate

Details of fixed cost for the project are provided in Table 22.

Table 22: Fixed Cost Estimate

Description	Amount per annum (PKR)
Administration expense	240,000
Administration benefits expense	168,000
Building rental expense	547,200
Electricity	118,325
Office expenses (stationery, entertainment, janitorial services, etc.)	241,920
Promotional expense	80,640
Insurance expense	310,440
Depreciation expense	837,534
Amortization of pre-operating costs	5,000
Bad debt expense	40,320
Total Fixed Cost	2,589,379

9.7. Human Resource Requirement

For the 1st year of operations, the human resource requirements are projected in Table 23.

Table 23: Human Resource Requirement

Description	Number of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Owner ⁸	1	-	-
Driver(s)	1	40,000	960,000
Drivers' Assistant(s)	1	20,000	480,000
Office Boy	1	20,000	240,000
Total	4		1,680,000

⁸ Owner draws profits/dividends instead of monthly salary.

10. CONTACT DETAILS

Details of suppliers of machinery and equipment are provided in Table 24.

Table 24: Suppliers and Service Providers

Reefer Manufacturer/ Service Provider	City	Contact Number	Website
Cold Star	Karachi	02135376499	https://coldstar.pk
Koldkraft (Pvt.) Ltd.	Lahore	0300-4555185	https://www.koldkraft.com
Koldware Industries (Pvt.) Ltd.	Karachi	021-36677024	https://www.koldwareindustries.com
EKN Cooling Systems	Islamabad	0334-5104019	https://ekncooling.com.pk
KoldKarrier (Pvt.) Ltd.	Lahore/ Islamabad/ Karachi	042-35717529	https://koldkarrier.icepacgroup.com
SkyFrozen Foods	Gilgit	058114 50759	-

Table 25: Truck Manufacturers

Truck Manufacturer	City	Contact Number	Website
Ghandhara Nissan Ltd.	Karachi	021-32556924-5	https://ghandharanissan.com.pk
Dysin Automobiles (Pvt.) Ltd.	Lahore	03003333312	https://www.dysin.com.pk
Ghandara Industries Ltd.	Karachi/ Lahore/ Rawalpindi	02132560083 0512226970 04237421985	https://gil.com.pk
Hinopak Motors Ltd.	Karachi	021111252525	www.hinopak.com
Master Motor Corporation Ltd.	Karachi	02134720035	www.mmcl.com.pk

11. USEFUL LINKS

Table 26: Useful Links

Organization	Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries and Production	www.moip.gov.pk
Board of Investment (BOI)	https://invest.gov.pk/logistics
Government of Punjab	www.punjab.gov.pk
Government of Khyber Pakhtunkhwa	http://www.kp.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	https://gilgitbaltistan.gov.pk
Government of Azad Jammu & Kashmir	https://ajk.gov.pk
Pakistan Cold Chain Development Company	https://www.ccapak.org
Trade Development Authority of Pakistan	www.tdap.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
Fleet Operators Association of Pakistan	http://foap.pk/
Punjab Small Industries Corporation (PSIC)	www.psic.gop.pk
Global Cold Chain Alliance (GCCA)	https://www.gcca.org
Road Safety Pakistan	www.roadsafetypakistan.pk
China Pakistan Economic Corridor (CPEC)	http://cpec.gov.pk/
Supply Chain Association of Pakistan (SCAP)	http://www.scap.pk
International Federation of Freight Forwarders Associations (FIATA)	https://fiata.com
Pakistan International Freight Forwarders Association (PIFFA)	https://piffapk.com

12. ANNEXURES

12.1. Income Statement

Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	8,064,000	10,471,104	13,319,244	16,677,359	18,561,900	20,659,395	22,993,907	25,592,218	28,484,139	31,702,846
<i>Cost of sales</i>										
Direct Labour	1,440,000	1,545,120	1,657,914	1,778,941	1,908,804	2,048,147	2,197,662	2,358,091	2,530,232	2,714,938
Fuel Cost	1,276,800	1,620,685	2,015,206	2,466,612	2,683,674	2,919,837	3,176,783	3,456,340	3,760,497	4,091,421
Refrigeration cost	1,225,728	1,555,857	1,934,598	2,367,947	2,576,327	2,803,044	3,049,711	3,318,086	3,610,078	3,927,764
Vehicle maintenance and toll cost	395,050	467,953	551,284	647,529	713,197	785,627	865,522	953,664	1,050,915	1,158,231
Total cost of sales	4,337,578	5,189,615	6,159,001	7,261,030	7,882,002	8,556,654	9,289,677	10,086,180	10,951,722	11,892,355
Gross Profit	3,726,422	5,281,489	7,160,243	9,416,329	10,679,898	12,102,741	13,704,229	15,506,038	17,532,417	19,810,491
<i>General administration & selling expenses</i>										
Administration expense	240,000	257,520	276,319	296,490	318,134	341,358	366,277	393,015	421,705	452,490
Administration benefits expense	168,000	180,264	193,423	207,543	222,694	238,950	256,394	275,111	295,194	316,743
Building rental expense	547,200	601,920	662,112	728,323	801,156	881,271	969,398	1,066,338	1,172,972	1,290,269
Electricity	118,325	128,737	140,066	152,392	165,803	180,393	196,268	213,539	232,331	252,776
Communications expense (phone, internet etc.)	161,280	5,150	5,526	5,930	6,363	6,827	7,326	7,860	8,434	9,050
Office expenses (stationery, entertainment, janitorial servi	241,920	7,726	8,290	8,895	9,544	10,241	10,988	11,790	12,651	13,575
Promotional expense	20,160	80,640	104,711	133,192	166,774	185,619	206,594	229,939	255,922	284,841
Insurance expense	310,440	263,874	217,308	170,742	124,176	77,610	31,044	632,428	537,564	442,700
Depreciation expense	837,534	837,534	837,534	837,534	837,534	837,534	837,534	560,084	1,688,962	1,688,962
Amortization of pre-operating costs	5,000	5,000	5,000	5,000	5,000	-	-	-	-	-
Bad debt expense	40,320	52,356	66,596	83,387	92,810	103,297	114,970	127,961	142,421	158,514
Subtotal	2,750,659	2,444,792	2,545,367	2,663,010	2,768,831	2,884,075	2,742,687	4,672,927	4,797,075	4,942,106
Operating Income	975,763	2,836,697	4,614,876	6,753,320	7,911,067	9,218,666	10,961,542	10,833,111	12,735,342	14,868,385
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	61,250	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	1,293,500	-	-	-
Earnings Before Interest & Taxes	975,763	2,836,697	4,614,876	6,753,320	7,911,067	9,218,666	12,316,292	10,833,111	12,735,342	14,868,385
Interest expense on long term debt (Project Loan)	-	-	-	-	-	-	-	-	-	-
Interest expense on long term debt (Working Capital Loan)	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	975,763	2,836,697	4,614,876	6,753,320	7,911,067	9,218,666	12,316,292	10,833,111	12,735,342	14,868,385
Tax	48,788	337,339	804,462	1,483,661	1,888,873	2,346,532	3,430,702	2,911,588	3,577,369	4,323,934
NET PROFIT/(LOSS) AFTER TAX	926,975	2,499,358	3,810,413	5,269,658	6,022,194	6,872,133	8,885,591	7,921,523	9,157,973	10,544,451

12.2. Balance Sheet

Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	250,000	1,431,103	3,310,821	5,299,047	7,422,709	9,273,125	11,044,654	12,126,510	21,765,103	32,632,444	45,231,868
Accounts receivable		220,932	253,906	325,895	410,912	482,730	537,278	597,990	665,563	740,772	824,479
Pre-paid building rent	45,600	50,160	55,176	60,694	66,763	73,439	80,783	88,861	97,748	107,522	-
Pre-paid insurance	310,440	263,874	217,308	170,742	124,176	77,610	31,044	632,428	537,564	442,700	-
Total Current Assets	606,040	1,966,069	3,837,211	5,856,378	8,024,560	9,906,904	11,693,759	13,445,790	23,065,978	33,923,438	46,056,347
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building / Infrastructure	51,840	46,656	41,472	36,288	31,104	25,920	20,736	15,552	10,368	5,184	111,919
Furniture & fixtures	130,000	110,500	91,000	71,500	52,000	32,500	13,000	264,836	225,110	185,385	145,660
Office vehicles	5,174,000	4,397,900	3,621,800	2,845,700	2,069,600	1,293,500	517,400	10,540,465	8,959,395	7,378,326	5,797,256
Office equipment	245,000	208,250	171,500	134,750	98,000	61,250	24,500	419,887	356,904	293,921	230,938
Security Against Building	136,800	136,800	136,800	136,800	136,800	136,800	136,800	136,800	136,800	136,800	136,800
Total Fixed Assets	5,737,640	4,900,106	4,062,572	3,225,038	2,387,504	1,549,970	712,436	11,377,540	9,688,578	7,999,615	6,422,572
<i>Intangible assets</i>											
Pre-operation costs	25,000	20,000	15,000	10,000	5,000	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	25,000	20,000	15,000	10,000	5,000	-	-	-	-	-	-
TOTAL ASSETS	6,368,680	6,886,175	7,914,783	9,091,416	10,417,064	11,456,874	12,406,195	24,823,329	32,754,556	41,923,053	52,478,919
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		54,007	64,680	76,818	90,596	98,203	106,452	115,399	125,103	135,627	147,043
Total Current Liabilities	-	54,007	64,680	76,818	90,596	98,203	106,452	115,399	125,103	135,627	147,043
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	6,368,680	6,368,680	6,368,680	6,368,680	6,368,680	6,368,680	6,368,680	9,891,277	9,891,277	9,891,277	9,891,277
Retained earnings		463,488	1,481,423	2,645,918	3,957,788	4,989,991	5,931,062	14,816,653	22,738,176	31,896,149	42,440,599
Total Equity	6,368,680	6,832,168	7,850,103	9,014,598	10,326,468	11,358,671	12,299,742	24,707,930	32,629,453	41,787,426	52,331,876
TOTAL CAPITAL AND LIABILITIES	6,368,680	6,886,175	7,914,783	9,091,416	10,417,064	11,456,874	12,406,195	24,823,329	32,754,556	41,923,053	52,478,919

12.3. Cash Flow Statement

Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		926,975	2,499,358	3,810,413	5,269,658	6,022,194	6,872,133	8,885,591	7,921,523	9,157,973	10,544,451
Add: depreciation expense		837,534	837,534	837,534	837,534	837,534	837,534	560,084	1,688,962	1,688,962	1,688,962
amortization of pre-operating costs		5,000	5,000	5,000	5,000	5,000	-	-	-	-	-
Accounts receivable		(220,932)	(32,974)	(71,990)	(85,017)	(71,817)	(54,548)	(60,712)	(67,573)	(75,209)	(83,707)
Pre-paid building rent	(45,600)	(4,560)	(5,016)	(5,518)	(6,069)	(6,676)	(7,344)	(8,078)	(8,886)	(9,775)	107,522
Advance insurance premium	(310,440)	46,566	46,566	46,566	46,566	46,566	46,566	(601,384)	94,864	94,864	442,700
Accounts payable		54,007	10,673	12,138	13,778	7,607	8,250	8,947	9,704	10,525	11,415
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(356,040)	1,644,591	3,361,141	4,634,144	6,081,450	6,840,408	7,702,591	8,784,447	9,638,594	10,867,340	12,711,343
<i>Financing activities</i>											
Additions to Project Loan	-	-	-	-	-	-	-	-	-	-	-
Additions to Working Capital Loan	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	6,368,680	-	-	-	-	-	-	3,522,597	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing acti	6,368,680	-	-	-	-	-	-	3,522,597	-	-	-
<i>Investing activities</i>											
Capital expenditure	(5,762,640)	-	-	-	-	-	-	(11,225,188)	-	-	(111,919)
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing acti	(5,762,640)	-	-	-	-	-	-	(11,225,188)	-	-	(111,919)
NET CASH	250,000	1,644,591	3,361,141	4,634,144	6,081,450	6,840,408	7,702,591	1,081,856	9,638,594	10,867,340	12,599,424

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 27: Economic Rates

Economic Rates	2020	2019	2018	Average
Inflation rate	11.2%	8.1%	5.6%	8.3%
Electricity growth rate	7.1%	14.3%	4.9%	8.8%
Water price growth rate	7.1%	14.3%	4.9%	8.8%
Gas price growth rate	7.1%	14.3%	4.9%	8.8%
Wage growth rate	11.2%	7.0%	3.8%	7.3%
Office equipment price growth rate	13.9%	6.7%	3.4%	8.0%
Office vehicles price growth rate	13.6%	8.1%	10.3%	10.7%

Table 28: Operating Cost Assumptions

Description	Details
Building rent growth rate	10%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	11.3%
Wage growth rate	7.3%
Electricity price growth rate	8.8%
Office equipment price growth rate	8.0%
Office vehicle price growth rate	10.7%

13.2. Revenue Assumptions

Table 29: Revenue Assumptions

Description	Details
Sale price growth rate	11%
Initial capacity utilization	60%
Capacity growth rate	10%
Maximum capacity utilization	90%

13.3. Financial Assumptions

Table 30: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate used for NPV	15%

13.4. Debt Related Assumptions

Table 31: Debt Related Assumptions

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	13%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	11.3%

13.5. Cash Flow Assumptions

Table 32: Cash Flow Assumptions

Description	Details
Accounts receivable cycle (in days)	10
Accounts payable cycle (in days)	5