

Cold Storage Feasibility

SAMPLE

Table of Contents

1.0 Executive Summary	3
Budgetary developments mixed for cold storage suppliers	5
Challenges impacting the industry	6
Competition expected to intensify.....	6
Regulations.....	6
Key recommendations.....	7
2.0 Analysis of the Cold Storage Industry	8
Demand analysis	8
Fish	8
Chicken.....	10
Dairy products	12
2.1.4. Supermarkets	14
Pharmaceuticals	15
Fruits and Vegetables	18
2.2. Supplier analysis	18
2.2.1. Fixed cold storage suppliers	18
Cold storage charges	23
2.2.2. Refrigerated trucks and reefer container suppliers	26
3.0 Cost to construct a fixed cold storage	29
4.0 Cost of Trucks.....	31
Outright purchase	31
Leasing of freezer trucks	32
Converting lorries to a freezer trucks	32
5.0 Regulations	33
5.1. Chlorofluorocarbon (CFC) certification.....	33
5.2. Food and pharmaceutical safety certification.....	33
5.3 Storing and transporting pharmaceuticals is regulated by the Cosmetics, Devices and Drugs Act.	33

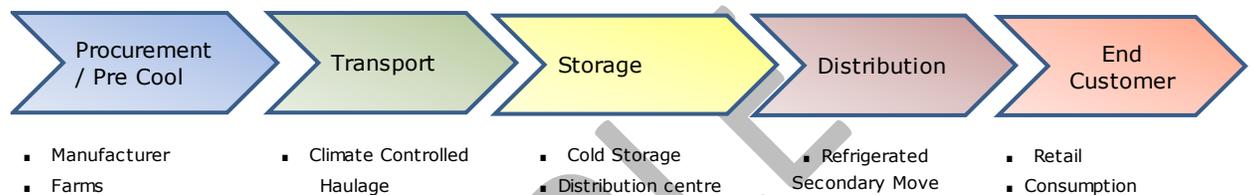
SAMPLE

1.0 Executive Summary

The cold storage industry offers storage services for perishable commodities and other items under controlled temperatures to maintain its quality. Storage facilities consist of fixed cold storages (industrial and small) and refrigerated transport. There are two groups of cold storage owners;

a) Private storage - storages owned by food producers, distributors and retailers

b) Commercial storage – storages owned by independent firms providing space to other commercial establishments



Source: Cold chain prospects in Country YY

Company SS conducted an analysis of the cold storage industry in City XXX and its surroundings. Our analysis focused on identifying the potential of the industry, characteristics of the buyers and sellers of cold storage, competition and trends.

In order to gather information for our analysis we interviewed 12 suppliers, 52 buyers, 100 transporters and selected government and affiliated agencies. Responses were mixed with selected suppliers not willing to disclose information.

As per our analysis we provide below our findings;

- The demand for refrigerated transport is increasing from fish transporters, export and import oriented fish processing companies, meat and chicken manufacturers and pharmaceutical companies. Of the above segments the largest demand is from those involved the fisheries industry. Transportation of dairy products is from the producers own fleet and selected distributors.
 - 100% of the fish transporters who participated in our survey stated that they wished to purchase two to three additional freezer trucks. However fish transporters stated that their fleet is at times under-utilised during the off season.

- Currently a few large rented refrigerated truck suppliers and many small suppliers operate in this market, making it competitive.
- We observe at present demand for fixed cold storages from various producers. This in the form of the producers wishing to reduce their cost of cold storage; as opposed to experiencing a significant dearth in cold storage facilities.
- However we expect the demand for fixed cold storage to rise. This is dCompany EU to the growing Country XY economy leading to a rise in perishable production volumes and dCompany EU to increased awareness among food producers and suppliers on the benefits of using cold storage.

Increasing demand is evident with current players increasing capacity (Company BB building two rooms at 450 square feet each, Company OO. – capacity unknown) and new players entering the market (Company EE – City KK – 500 pallets (1 pallet=1 tonne(T)), Company FF - Mar/Apr 2012- capacity unknown).

Company EE and Company FF are building fixed cold storage facilities Company WHrily to bring their cold storage requirements in-house. Company FF is also looking to rent their fixed cold storages. Moreover, the company has started a refrigerated transport service to deliver produce to FF retails stores and to rent.

Figure 1: All Island, Rs. Millions	2006	2007	2008	2009	2010
GDP (current market prices)	2,938,680	3,578,688	4,410,682	4,835,293	5,602,321
- YoY%	NA	21.8%	23.2%	9.6%	15.9%
- Consumption	2,439,816	2,949,712	3,799,084	3,967,770	4,557,348
- % of GDP	83.0%	82.4%	86.1%	82.1%	81.3%
- YoY%	NA	20.9%	28.8%	4.4%	14.9%
Agriculture, Forestry and Fishing	333,137	418,104	590,114	613,694	716,892
- % of GDP	11.3%	11.7%	13.4%	12.7%	12.8%
- YoY%	NA	25.5%	41.1%	4.0%	16.8%
- Livestock	39,006	44,630	100,013	102,776	113,884
- % of GDP	1.3%	1.2%	2.3%	2.1%	2.0%
- YoY%	NA	14.4%	124.1%	2.8%	10.8%
- Fishing	35,251	54,700	67,934	79,554	93,777
- % of GDP	1.2%	1.5%	1.5%	1.6%	1.7%
- YoY%	NA	55.2%	24.2%	17.1%	17.9%

Figure 2: Western Province , Rs. Millions	2009	2010
GDP (current market prices)	2,003,055	2,182,227
- YoY%	20.4%	8.9%
- Consumption	62,076	62,187
- % of GDP	3.1%	2.8%
- YoY%	NA	0.2%
Livestock	7,108	7,635
- % of GDP	0.4%	0.3%
- YoY%	NA	7.4%
Fishing	19,996	19,397
- % of GDP	1.0%	0.9%
- YoY%	NA	-3.0%

- The increase in the number of fixed cold storages appears to have curtailed demand for reefer containers. Company CC and Company DD are moving out of the reefer container market. Further, several buyers complained that the rent on reefer containers were high.
- The Country XY government is keen to reduce food waste (currently reported at 40% of production). Through local authorities (Ministry of Co-operatives and Internal Trade) the government is promoting the importance of preservation of food, hence creating awareness of the use of cold storages. Source:http://www.City XXXpage.com/archive_11/Apr22_1303450083KA.php
- Growth in organized retail – the main supermarket chains Food city, FF and Company AP are expanding their retail store footprint. Each store requires a cold storage and selected goods are transported in freezer trucks. Company AP was reliant on its supplier network to deliver products. Company LL did not participate in our survey.

Budgetary developments mixed for cold storage suppliers

- The recent budget 2012 induced 3% depreciation of the Country XY rupee makes exports more attractive. The exporters (mainly fish, fruits and vegetables) attracted by increased revenue Company EU will be encouraged to expand their volumes, thus demanding more fixed and mobile cold storage facilities.

However depreciation of the rupee will increase the cost of imported refrigerated equipment and the price of refrigerated trucks. Further, operating costs will also increase (electricity tariffs are slated to rise in January 2012).

- VAT on commercial trucks has been removed. This is a further boon to the refrigerated truck industry

Challenges impacting the industry

- Initial capital investment on building and machinery is high (refer 3.0 cost to construct a fixed cold storage). Operating costs are dominated by high electricity costs. According to industry sources high capital costs and operating costs lengthen the payback period to about 10-12 years.
- Few suppliers also stated that they feel there is insufficient awareness among buyers on the benefits of using cold storage, especially relating to refrigerated transport.
- Uneven distribution of cold stores. A large number of cold storages are located in City PP (6.5km from City XXX) and City WW (13km from City XXX) on the City NN road. However this is dCompany EU to i) strategic location/access to airport and port ii) sufficient space to build facilities and park trucks/containers.

Competition expected to intensify

- Currently the main players of fixed cold storage have a combined capacity of approximately 12,375T. Main suppliers of fixed cold storage are Company GG, Company HH, Company II, Company JJ, Company MM and Company NN. Company QQ, Company GG and Company DD are main providers of refrigerated truck transport.
- Contracts between the buyers and suppliers are for the medium term (3-5 years), thus reducing competition on an ongoing basis. However new entrants (Company BB, Company FF) and current suppliers expanding capacity is likely to increase competition.

Regulations

- To operate a fixed cold storage a Chlorofluorocarbon (cfc) certification should be obtained from the Central Environmental Authority.
- Food and pharmaceutical safety assurance is provided by Hazard analysis and critical control points (HACCP) certification. This is a recommended certification for fixed cold storages.
- Storing and transporting pharmaceuticals is regulated by the Cosmetics, Devices and Drugs Act.

Key recommendations

- The area we see the most demand coming from is refrigerated transport. Currently this market is competitive with a few large players and many small players. However, we feel an opportunity exist in providing a package of small fleet of trucks at competitive rates to buyers engaged in the fish, chicken and pharmaceutical industries.
- We believe there exist demand for fixed cold storage capacity. Specifically Company EE is looking for 200 - 300 pallets (at minus 27C) and COMPANY CQ looking for two, 10T rooms at -25C and +10C. Apart from these two companies several other companies were looking to renegotiate their current cold room contracts (Company SF, Company RR).
 - Despite City WW and City PP having the majority of suppliers, in the Western province we still feel this region is best suited for a fixed cold storage dCompany EU to the proximity to port, airport and availability of space to construct facilities.
 - Offering a package of fixed cold storage facilities and refrigerated transport together will be a solution that may interest companies. For example the current arrangement at Company EE is that Company HH provides the fixed cold storage but the refrigerated transport is provided by Company DD .
 - Further providing peak and off peak fixed cold storage rental rates may be seen as an advantage by some buyers. Despite there been no change in the operating cost for the cold storage supplier, for a buyer whose production volumes fluctuate during the year may find it attractive (as was communicated to us by fish processing firm Company RR).
 - All buyers of fixed cold storage did not want their products to be merged thus any facility will have to clearly compartmentalised.
- The reefer container storage market is affected by the fixed cold storages been built around the country, especially increasing capacity in the City WW and City PP areas.
- Overall most buyers were keen to obtain cold storages facilities and was reqCompany EUsting for brochures with a full description of services on offer

2.0 Analysis of the Cold Storage Industry

Demand analysis

We found the demand for cold storage (fixed and mobile) to be mainly from

- i. Suppliers of fish (import and export), chicken, meat, dairy products, fruits etc.
- ii. Supermarkets
- iii. Pharmaceutical companies

We observed that cold storage requirements for fish and broiler chicken experienced the most seasonality. Cold storage for fish in City XXX and surroundings are high during November to August while broiler chicken storage requirements reaches its peak during February to June and September to November.

All buyers stated that they do not wish their products to be merged with other commodities.

Fish

To preserve fish for a long period of time the fish are initially blast frozen and subsequently stored in freezer rooms. Fish is to be stored at a temperature of minus 18C.

Key findings

- A majority of buyers required freezer truck transportation.
 - Company TP is willing to consider a rental freezer truck package that competes with current rates (AED4,500 per truck per day). Company MA, Company EC and Company FS were keen to know freezer truck rental prices (refused to disclose their current costs).
 - In our interview of 100 small size fish transporters (those owning 2 to 3 freezer trucks), all the participants stated that they wish to increase their fleet. They also stated that on average they charge AED100,000 per month to rent their trucks and their profit margin is 50%.
- Company SF Management stated that if a fixed cold storage facility is located between City AN and City ES and the rates offered competes with Company HH (AED22 per kg per month) that they would be interested.
- Company RR wishes for flexible fixed cold storage rates during the season and off season

- Most buyers wanted more competition in the industry thus bringing down their cost of cold storage

We conducted a survey among 11 fish processing companies and the main companies are listed below.

a) Company TP

Company TP was set up in 1996, as a deep sea fishing company engaged exclusively in long and bottom line fishery. The company Company WHrily engages in catching tuna. The company operates 40 long line vessels which land approximately 500T of tuna and bill fish, per month.

Usage of cold storage

The fish landed at the City TM harbour is transported in rented freezer trucks to Company TP's processing plant in City NN. Company TP stores approximately 40-50T of fish with Company DD.

Opportunity

Company TP hires about 25 freezer trucks per day to transport the fish catch to City NN. The trucks are mainly owned by individuals who own about two to three trucks. The company pays AED4,500 per truck per trip and AED2,000 per day if the fish cannot be unloaded from the freezer trucks in time.

In our discussions with the management of Company TP they stated that if a rental freezer truck package can be offered that competes with current rates, that they would be interested.

b) Company SF

The company imports tuna from Taiwan.

Usage of cold storage

The company has a 400T fixed cold storage facility and further rents 300T (approximately seven container loads) from Company HH at a cost of AED22 per kg per month (management was not very sure if this rate was correct). Company SF have been using Company HH for the past five to six years.

The company hires freezer trucks to transport fish from Mabole to Badalgama at a cost of AED6,000 per trip per truck.

Opportunity

Management stated that if a fixed cold storage facility is located between City AN and City ES and competes with rates currently offered by Company HH that they would be interested.

c) Company RR

Importers of frozen seafood for retail in Country XY.

Usage of cold storage

The company currently imports two 40 foot containers of tuna on a regular basis thus requiring 60T of cold storage facility at minus 30C. At present storage space is rented (the management refused to disclose the supplier) at two facilities in City XXX and City NN.

The agreement with current cold storage supplier is fixed for a 2-3 year period. Management stated that this is disadvantages as during the off-season storage requirement is greatly reduced, however the company continues to pay for the unutilized space.

Opportunity

The management stated that if a flexible cold storage arrangement is provided where space and rates vary according to use (season and off season) they would be interested.

d) Others

Company MA, Company EC, Company LH, Company FN

These companies have their own fixed cold storage and stated that currently their capacity is sufficient to meet their requirements. However they were keen to reduce their current cost refrigerated transport and also increase usage of freezer trucks.

Chicken

Key findings

- Producers of broiler chicken have inconsistent demand for fixed cold storage. Demand for cold storage peaks during February to June and September to November. The producers have their own cold rooms and on occasion have used rented storage space.
- There exist a demand for rented refrigerated transport
 - Company WH and Company PF wish to increase/replace its refrigerated transport fleet and are open to bids from suppliers

- The temperature requirement is at least minus 18C and the produce cannot be merged with other products

We contacted six producers and the main results are highlighted below;

a) Company AC and Company WH

Use of Cold Storage

Company WH uses five 40 feet reefer containers at a cost of AED50,000 per month to store sausages. The reefer containers have been rented from Company LR. The agreement has been in place for four to five years. Management doubts if these rates can be obtained nowadays.

Refrigerated transport

Currently uses five freezer trucks and are 10.5 feet long. Current rates are approximately AED35 - 37 per km.

Opportunity

Management is willing to consider competitive offers for refrigerated transport. The following are their requirements;

- a) Freezer truck fleet size required – 5
- b) Length per truck - 10.5 feet
- c) Distance to be covered - 2,500 – 3,000 km per month
- d) Maximum rate - AED35 – 37 per km
- e) The suppliers should provide diesel and drivers

As per the annual report COMPANY AC incurred AED19 million as cost for renting cold storage rooms in year 2008 dCompany EU to the higher stock levels.

The company previously used storage space from Company HH, this is in addition to the Company WH's own cold storage facilities. However dCompany EU to the volatile nature of broiler chicken stocks Company HH storage has not be used for the past 10-12 months. In the broiler chicken industry, producers aim to increase stocks during the September to November period and February to June period.

b) Company PF

The company currently rents 200-300T storage space from Company HH. Management stated that the cost per kg is AED2 - 3 (However they were not very sure).

Opportunity

The company is looking to replace its fleet of refrigerated trucks and is willing to consider a rental arrangement. They require four to five, 10.5 foot trucks with a daily mileage of approximately 50-100 km. The supplier should provide the driver.

c) Company WW

Currently rents 125T space (in pallets) with Company HH (City WW cold store) to store its broiler chicken.

Cold Storage charges

1st month AED0.14 per kg per day storage charges +AED0.04 per kg initial handling charges = AED0.18 per kg

2nd month Storage charges AED0.12-0.14 (handling charges not applicable) per kg

The company was quite pleased with their current cold storage arrangements and did not close that they are open to alternate offers.

d) Company FB

The company was not willing to disclose any detailing relating to their cold storage. They only stated that most of their requirements are serviced in-house.

Dairy products

Key findings

- Current demand of dairy producers appears to be met in-house and through third parties.
- Temperature requirements for ice cream is minus 27C, with dairy products 0 to +4
- Company EE reqCompany EUsted a proposal to be presented to them with rental costs for 200 – 300 pallets. This would be utilized during the April to December.

We contacted five dairy producers and the main responses are highlighted below;

a) Company EE

Leading dairy producer in Country XY formally stated owned now owned by Company FF. The company accounts for almost 2/3 of the ice cream market.

Usage of cold storage

i) Cold rooms

Currently Company EE has booked 500 pallets (1 tonne per pallet) of cold storage with Company HH Cold Storage (Pvt.) Limited. It is reported this is mainly used for ice cream. The contract with Company HH is rolled over every three years. Temperature requirement -27C. Cost of rented cold rooms was not disclosed.

ii) Refrigerated transport

Company EE hires 14 trucks (total capacity 6-8 pallets) from Company DD . Cost of rented freezer trucks was not disclosed.

Latest developments

Company EE is currently building a 500 pallet cold storage in City KK. This is expected to be completed in March 2012. It was reported that on completion of this cold storage management plans to terminate the current Company HH agreement.

Opportunity

Company EE reported to us that during April and December between 200 and 300 extra pallets are required. This is in addition to the 500 pallets currently booked at Company HH (which will be stored from March 2012 at Company EE's new cold storage facility). Management stated that a proposal to be presented to them with fixed storage rental cost for 200 – 300 pallets.

b) Company HK

Usage of cold storage

The company is currently building a new cold storage facility in City HT to store approximately 360T of cheese (daily production of 2T for six months).

Opportunity

Immediately looking for a 10 X 8 X 8 reefer container to transport cheese.

c) Company LMM

Company LMM has approximately 80 dealers transporting their products around the country. Several dealers have 2-3 trucks and some have small cold storage facilities.

The dealers purchase a freezer truck and then employ a driver and sales representative. The drivers are paid between AED25,000 - 35,000 per month with overtime and lodging paid for in addition. The sales representative is paid a basic salary plus a 0.5% commission.

d) Company LL

Our repeated attempts to contact management at Company LL were not successful. Our general observation is that the company uses its own fixed cold storage facilities and refrigerated trucks.

2.1.4. Supermarkets

- Each retail store require a cold storage facility
- FF Foods PLC, reqCompany EUst a brochure with rental freezer truck fleet description and prices

a) Company FFC

Usage of cold storage

- i) Refrigerated Transport – Currently rents 7-8 chiller trucks (1.5T to 2.5T capacity) on a monthly basis from Company DD . The cost is between AED100,000 – AED200,000 per truck per month. Both parties have agreed on a set mileage for the trucking fleet and Company DD provides the fCompany EUl and drivers.
- ii) Fixed cold storage – 250T cold storage space booked with Company HH on a 10 year agreement (renewal date/year not disclosed). The capacity requirement during the season goes up to 500 M.T during the season. When inquired as to the cost of the above ten year agreement, head of operations at FF Foods stated “Cannot give specific numbers but rest assured it runs in to millions”.

Opportunity

Management stated that they are open to competitive bids to meet their refrigerated transport requirement.

Recent developments

In a press release dated July 2011, the company stated that, backed by the US Agency for International Development (USAID) it will build a cold chain to bring fishery and

agricultural produce from former war torn regions to the market. The group's logistic unit and USAID will spend AED400 million building the cold chain to carry produce from the North and East of Country XY. Source <http://www.countryxybusinessonline.com/fullstory.php?nid=45512736>.

This was confirmed during our meeting with Company FF, where they stated they are building a storage facility in City PP and that it is expected to be made available in about 4-5 months. Our research indicates that cost of this facility is AED207 million, unfortunately capacity details were not disclosed.

b) CWE

In the Western province there are economic centers located at City WW, City LP, City TR, and City NH.

Country XY President NameDA has directed the Minister of Cooperatives and Internal Trade NameMAD to provide cold storage facilities to the economic centers island wide. The President has made this move as massive wastage of vegetables was reported from several economic centers dCompany EU to the oversupply. Around 70,000 kilos of vegetables were discarded in City BD economic center alone yesterday as they could not be sold.

http://www.City XXXpage.com/archive_11/Apr22_1303450083KA.php

City NH and City WW economic centers could be the first locations where fixed cold storages will be built. It should be noted that the volume of vegetables and fruits being brought to these locations are considered to be low (volume information was not made available to us)

We were asked to contact CWE management in January 2012, where they would be identifying their specific cold storage requirements through a “facilities plan”.

C) Company AP

Company AP does not have a centralized cold storage facility thus relying on suppliers to transport goods to their retail stores.

Pharmaceuticals

- Storing and transporting pharmaceuticals is regulated by the Cosmetics, Devices and Drugs Act.

.... (2) No person shall store, sell, distribute, transport or offer for sale any drug without a licence issued by the Cosmetics, Devices and Drugs Authority except a drug which in the opinion of the Minister is safe for general use and which is specified by regulations made under this Act.

(4) No person shall store or sell any drug in any premises unless such premises is licensed by the Cosmetics, Devices and Drugs Authority, except such drug which in the opinion of the Minister is safe for general use and which is specified by regulations made under this Act."

Source: <http://www.customs.gov.countryXY/docs/25344.pdf>

- Most fixed cost storages requirements are as follows

Temperature Zones	Storage
+2C to +8C	Imminoglobulins/ Vaccines
Below 25C	Most Drugs
Below 30C	Devices

- Company MH, COMPANY BJ and Company LK are looking for refrigerated transport. Despite their first preference being to purchase a fleet of trucks outright they are open to a rental arrangement
- COMPANY BJ is also keen on a fixed cold storage facility located close to the City XXX port and/or airport

We contacted seven pharmaceutical companies and the main responses are highlighted below;

a) Company MH Pharmaceuticals

Company MH Pharmaceuticals (Company MH) currently owns a 30,000 square feet fixed cold storage facility in City WT. The facility is separated into three categories (+2C to +8C, below 25C and below 30C).

Latest developments

In September 2011 Company MH entered into a contract to hire cold storage space. Company MH will handle all the contents at this facility.

Capacity	6,000 Square feet
Location	Nagoda, Wattala
Temperature	Room temperature
Cost	Rs. 25 per square foot for storage only

The management stated that the supplier of the above space is Company TI. However having contacted Company TI they stated that they do not possess fixed cold storages for rent and that they are only involved in building cold storages.

Opportunity

Company MH have seven freezer trucks and management is looking to expand its fleet. Management did not disclose the expected expanded fleet size stating a decision will be made when truck fleet capacity of prospective truck suppliers is communicated to them. The details should be emailed to NameNJ.pharma@Company MH.com

b) COMPANY BJ

COMPANY BJ has 23 distributors across the country. Each distributor has their own freezer truck and a few distributors have their own cold storage facility.

Opportunity

- i) Cold room – Management of COMPANY BJ stated they would be interested if a fixed cold storage facility is made available to them near the airport or a port. When inquired as to the capacity required they said they do not have any details at the moment.
- ii) Refrigerated transport - Management stated that they are looking to purchase or rent 7 to 8 freezer trucks. The requirement is for the 10.5 foot freezers.

c) Company LK

Use of cold storage

Company LK currently have two fixed cold storage facilities at City LA and Grandpass. These are 10 feet by 20 feet in size.

Opportunity

Refrigerated transport – Company LK is looking to purchase or rent three freezer trucks (one small truck – 1.5T and two 2.5T).

Fruits and Vegetables

Cold storage for fruits is predominantly used by exporters. We contacted 20 exporters of fruits ranging from small scale to large. The small to medium scale buyers stated that that did not require cold storage at this stage. Several exporters had their own fixed cold storages which they deemed sufficient to store their current requirement.

Company BB is considered to be the largest fruit exporter in the country. They have a 2,000 cubic feet cold storage in City LB which is used to store their own produce and is building a new facility in City LB.

Opportunity

Company CFI, 27A Area LP, City GN require fixed cold storage of two rooms of 10T each. The rooms are to store sea food at minus 25C and vegetables +10C. They have the requirement throughout the year. Currently they have a 3T fixed cold storage. The equipment is serviced by COMPANY ET at a cost of approximately AED15,000 a month.

2.2. Supplier analysis

At the commencement of our survey we identified 20 suppliers of cold storage (fixed and mobile). Upon further investigation it was revealed that about six companies were no longer in operation.

2.2.1. Fixed cold storage suppliers

- The large suppliers contribute about 12,375T towards industry capacity. The majority is provided by Company HH (7,000T). Company BB is building two 450 square feet fixed cold storages in City LB and Company FF is building a storage in City PP. These facilities are to come to the market in February (Company BB) and March/April (Company FF).
- Most suppliers provided cold storage for all types of foods. However Company HH stated that they only provided fixed cold storage for fish and meat.
- All the suppliers stated that the high cost of electricity was a problem in operating their fixed cold storages. The only company to provide electricity costs was Company NN. They stated that their electricity costs was AED400,000 per month. This cost is very high for a 150 cubic meter space. Thus we believe the electricity

costs includes blast freezer usage, 150 cubic meter facility and another facility used to store its groups company's (Company TP) fish (about 40-50T as reported by Company TP).

- Company II and Company NN reported 100% utilization during the season and 50% and 70-80% during the off-season respectively. Company II stated their peak months are March to April and November to December. COMPANY GG has utilization rates of 80% during the season (May – August), and 60% off season.
- Company II stated that their monthly maintenance cost was AED30,000 and Company EU stated their costs as AED45,000.
- COMPANY GG, Company II, and Company NN had blast freezers. The others cited high cost of the blast freezer and high electricity usage as reasons not to have this equipment. Cost of an air blast freezer is approximately AED4.5 million and electricity usage is about 60 horse power to blast freeze 1T of fish.
- Suppliers stated that more awareness has to be created among the buyers on the benefits of using cold storage (especially on refrigerated transport). Company EU stated that they lack trained employees whilst Company II stated they need to lower prices to attract more customers but also said if prices are lowered it would be difficult to sustain themselves.
- Suppliers stated that customers req Company EU st their products not be mixed with other products and that the supplier maintains a high quality of service in terms of;
 - i) Cleanliness
 - ii) Products stored at the required temperature
 - iii) Capacity be made available on req Company EU st

a) Company HH

Company HH is a Board of Investment (BOI) registered limited liability company incorporated on January 29, 2004. The Company started its commercial operations in February 03 2005. The facility is located at 309/6 City NN Road, City WW and initially had 112 employees.

The storage facility had an initial cost of AED760 million and operates within the legal entity James Finlay City XXX. The facility has 2,000,000 cubic feet and 9,000 pallet spaces of warehousing. Management stated that they have the capacity to store 7,000T of commodities.

Cold room temperatures range between minus 21 C to + 18 C (frozen & chilled). The facility is fully racked with refrigerated air bag enclosed dock areas, electric reach trucks & fork lifts.

Company MCC implemented a fingerprint access control system for this facility. Phase II involved the deployment of a complete time & attendance solution. Biostation fingerprint readers were installed throughout the premises to capture the in and out times, and fed into a CenAttendance Software. The attendance software was customized towards the requirements of Company HH.

Company HH does not accept raw fish, they only accept frozen fish and these are placed in boxes and cartons. Utilisation rates were not disclosed.

All the buyers stated that they were extremely pleased with the quality of service at Company HH.

i) Freezing charges

Company HH does not have a blast freezer

ii) Cold storage charges (frozen)

- a) Fish - The cost to store 1T of fish is AED24,000 per month.
- b) Chicken - 125T boneless chicken stored in pallets

Price per kg per day

1st month AED0.14 storage charges +AED0.04 initial handling charges = AED0.18

2nd month Storage charges AED0.12-0.14 (handling charges not applicable)

Separately, the flat rate to store 1T of chicken is AED24,000 per month.

Refrigerated transport

It was reported that Company HH has two freezer trucks. The company charges between AED3,000 - 4,000 to rent a 14.5 feet freezer truck from City XXX 15 to City AIP (approximately 32 km).

As per the company website the following service are offered, <http://www.CompanyHH.countryXY/warehousing.htm>

- Storage in various temperature ranges – chilled, frozen and ambient

- Handling of pallets, cartons, bins, drums, trays, crates.
- Cross docking / flow through of both pallets and cartons/crates
- Picking of full pallet, full carton/crate
- Container unloading/loading – 20 foot and 40 foot
- Export load out and documentation (some sites)
- Rebranding/labelling as and when required
- Repackaging of goods

b) Company JJ Limited

Company JJ commenced operations in October 2003 and is a unit of the Company GH.

Under the Groups transportation arm, Company HMM, Company JJ set up a 100,000 square feet distribution center at City LA at a cost of AED300 million. The center is equipped with a selective racking system of 9,000 pallet positions for general cargo storage; with dedicated areas for bonded, temperature controlled and cold storage facilities. The facility is situated on eight acres. It was reported to us that the capacity of the cold rooms is 2,500 pallets. Facility utilisation rates were not disclosed.

Fixed cold storage agreement with Company LCOMPANY EU;

- 1) Storage charges for Brand SA and Brand FR(fixed) up to 262,500kgs - AED1,708,500
- 2) Storing charges above 262,500kgs (per 1kg per day) - AED0.34
- 3) Handling charges (per 1kg) - AED1.84

We believe this is stored at Company HH, City WW. This is because when we investigated as to where the above items are stored the location provided by Company JJ was the Company HH City WW cold storage facility.

c) Company GG

The COMPANY GG's main cold storage facilities are located is at 15 Rock House Lane, City MD, City XXX 15. As per the annual report 2008 the total income from cold room facilities was AED42.8 million. It was reported to us that COMPANY GG has a 57 truck fleet. COMPANY GG refused to participate in our survey; the website reveals following details, (http://companyGG.gov.countryXY/our-services/Company_GG-ice-plants-cold-rooms/).

Fixed cold storage facilities at COMPANY GG

- 1000 M.T. cold storage – (-20°C)
- Blast freezing 20 M.T. per day- (-40°C)
- Chilled storage 100 M.T. – (+5°C)

Figure 4: CFC charges		Freezing	Storage Charges per kg. (Rs.) (Excluding taxes)			
Product	per kg (Rs.)	1st Week	2nd Week	3rd Week	4th Week	
Fish	10.5	4.9	4.2	2.8	2.8	
Chicken/Beef & Meat	8	4.9	4.2	2.8	2.8	
Prawns/ Cuttle fish/Lobsters or other Aquatic products	10	4.9	4.2	2.8	2.8	
Storage charges (for frozen products)	-	4.9	4.2	2.8	2.8	
Ice cream & fruit juice	-	4.9	4.2	2.8	2.8	
Storing of fish on ice	-	4.9	4.2	2.8	2.8	
Chilled Storage Charges						
Product	Charges (Rs.) for 07 days					
Fruits/Vegetables/Milk & Dairy products	07.00 +NBT + VAT					
Space leasing for monthly rental charges (Low or High Temperature)						
Room No.	Temperature	Monthly rental (Rs.) (excluding taxes)				
101-108	(-20C)	425,000				
109	(-20C)	87,750				
110	(-20C)	610,000				
115	(+5C)	200,000				
116	(+5C)	115,000				
117	(+5C)	87,850				
118	(+5C)	87,750				
121	(+10C)	250,000				
123	(+5C)	250,000				

Unconfirmed reports state that during the season utilization is approximately 80% and off season its 60%.

d) Company NN

Company NN is considered to be the first cold chain operator in the country and enjoys BOI status.

Basic information

Locations a) 87 New NL Road, City PP, City LA b) City UK (System "B" of the Area HLM).

Facilities available a) Cold storages b) Coolers

Temperature - two rooms consisting of minus 20C and minus 45C

Location 1

The property in City LA is situated at City PP. The extent of the property is 41.26 perches and is on a 99-year lease. The leasehold value of the land and property is AED15,926,850. It has a building on the property measuring 7,695 square feet. This property is used as a transit cold storage, processing, re-packing and grading stores for export of produce. This property is mortgaged (primary) to Bank ZZ for the facilities obtained.

Company NN reported that during the season capacity utilization is approximately 100% however during the off-season it ranges between 70-80%.

Electricity cost per month is reported to be AED400,000 and was the only supplier to provide information relating to electricity.

Company NN mentioned that their main customers are foreigners but refused to disclose any further details. Management also stated that several customers have specific temperature requirements with their products/produce “not be mixed with unsuited products”

Cold storage charges

It was reported to us that City PP facility has a capacity of 150 cubic meters. The cost to rent 150 cubic meter space is AED222,500 plus taxes per month and 100 cubic meter space is AED150,000 plus taxes per month.

Company NN also provides storage space to one its group companies Company.

Location 2

The property is located in the village of City UK (System "B" of the Area HLM). The extent of the property is 4.048 hectares and is on a 30 year lease. It has a building on the property measuring 5,994 square feet. The leasehold value of land and property is AED10,282,000. The property is used as the company's packing house and collection centre for fruits and vegetables. It is equipped with cold storage and pre-cooling equipment.

d) Company II

Incorporated in 1996, Company II part of Company QQ & Company. Company II is also a cold chain project approved by the BOI providing the services of fixed cold storage facilities and refrigerated transportation facilities.

The company states that they store all food items (dairy, fish, meat, vegetables) at any suitable temperature. Our research indicates the storage facility cost AED79 million to build.

Basic information

Location - 68, New NL Road, City PP

Temperature and Capacity

Room 1 - Minus 20 100T

Room 2 - Minus 20 600T

Room 3 - Minus 40 10T

Company II reported that during March to April and November to December capacity utilization is approximately 100%. However during the off-season utilisation drops to 50%. Monthly maintenance of the cold storages and warehouses is approximately AED30,000.

Management states that the cold storage industry is stagnant and to increase sales they have to lower prices. However they believe operating at reduced prices is not sustainable in the long term.

Freezing charges

To blast freeze at least 1,500kgs for 8 hours - 1kg – AED20. Lesser quantities are not taken dCompany EU to having to switch on the blast freezer for the entire room

Cold storage charges

a. By weight (mainly for fish)

- i. 500kg – 1 week – AED25kg (during the interview it was communicated to us that the storage cost is AED25kg for the week however we believe this to be for the month)
- ii. Over 25,000kgs AED400,000 per month

b. By space (for all commodities) per month

- i. 23 x 23 x 19 feet – AED400,000
- ii. 9 x 9 x 9 feet – AED300,000

e) Company MM

The company operates a cold storage facility at City PP, built at a cost of approximately AED215 million. Company TI who built the facility stated that capacity of this cold room is about 25% of the Company HH capacity (7,000T X 25% = 1,750T). The company also has a 4T blast freezer.

The storage is complaint with HACCP standards and provides storage facilities for fish and poultry products. The main customer of the company is Country XY Army.

f) Company BB

Operates a 2,000 cubic feet storage facility in City LB comprising of 5 warehouses. Management indicated that currently the City LB facility is only used by them and not rented out. This is located at 800/2 City KK Road, City LB. Our research indicate that the facility was constructed in 2004 at a cost of AED74 million.

New facilities

Company BB is building cold storage facilities in close proximity to its existing City LB facility and another in City BD (close to the City BD Economic Centre).

The new City LB facility is being constructed at 220/5, NC road, AR, City LB and is expected to be completed in February 2012. Our research indicated that the investment on the new facility is AED472 million and will employ 23 people at the initial stage. It was reported to us that the building is complete and the equipment is yet to be installed.

This facility is to have;

- 1) Two rooms at temperature minus 25C, capacity 450 square feet
- 2) Two rooms at temperature minus 5C, capacity 450 square feet

Management is reluctant to rent out storage space for fish and meat, and wish to concentrate on fruits and vegetables.

g) Company EU

Basic information

Office Location - 1st Floor Templers Road, Mt. Lavinia. Storage location was not disclosed

Facilities available a) Cold storages b) Warehouses c) freezers

Temperature and Capacity

Room 1 Minus 20, capacity 500 liters of ice cream

Room 2 Minus 20 to 0, capacity 500 liters of ice cream

Room 3 0 to plus 8, 2T

Company EU reported that during the season (March – April and November – December) capacity utilization is approximately 100% however during the off-season is 80%. Monthly maintenance of the cold storages and warehouses is approximately AED45,000. Electricity costs were not disclosed but stated that costs were dependent upon the compressor used and monthly utilisation.

COMPANY EU customers have stated they require

- i) Quality and cleanliness of storage facility
- ii) Expect good service – storage availability as and when needed

h) Company ILA

We deployed two teams to gather information relating to this company. Mr. Name BF, Chairman, stated that they have a cold storage facility in City WT with a capacity of 300T, which is given out on rent. However, Mr. Name FD stated that they don't rent out their facilities.

In June 2007, General Manager of Country YU's Company MY, Mr. Name BU and Company ILA signed an agreement to import refrigeration equipment to Country XY. Source: <http://www.sundayobserver.lk/2007/06/24/>

Mr. Fernando stated that on 26/11/11 the company imported refrigeration equipment (capacity 125T) from Country YU for AED8- 9 million. The equipment is for a Company ILA plant in City AV.

2.2.2. Refrigerated trucks and reefer container suppliers

- The demand for refrigerated transport is increasing from fish transporters, export and import oriented fish processing companies, meat and chicken manufacturers and pharmaceutical companies. Of the above segments the largest demand is from those involved the fisheries industry. Transportation of dairy products is from the producers own fleet and selected distributors.
- 100% of the fish transporters who participated in our survey stated that they wished to purchase two to three additional freezer trucks and. However fish transporters stated that at times their fleet is under-utilized during the off season.
- Currently a few large players and many small players operate, making this market competitive. Few suppliers also stated that they feel the there is insufficient awareness among buyers on the benefits of using refrigerated transport.

- Most trucks were 14.5, 16.5 and 17.5 in length. Of the refrigerated trucks Company QQ reportedly has the largest fleet with 60 trucks followed by COMPANY GG 57. Company FF entered the market recently (2011) purchasing 5 trucks at a cost of AED4.5 million each.
- Most of these large truck suppliers had Brand SI and Mitsubishi vehicles, however the smaller players predominantly had Brand SI. The fish transporters prefer Brand SI vehicles due to its high mileage, good overall performance and attractive price. However they stated that they had experienced a shortage of spare parts.
- Company HH and Company QQ charges AED3,000-4,000 and AED6,500 to transport fish in a 14.5 foot truck over a distance of 32 km. Company DD 's minimum rental time was for 8 hours for which AED9,750 was charged to transport all types of foods except ice cream. Ice cream was charged AED10,050. In both scenarios if the time frame exceeded 8 hours, AED730 was charged for each additional hour. Company JJ's small truck load rental cost is AED5,500 whilst the large truck load rental is AED6,500.
- Company DD's monthly maintenance cost was about AED3,000 whilst Company FF new fleet was AED5,000. Company JJ and Company BB said they spend about AED550,000 and AED50,000 on their entire fleet. Fleet sizes for these two companies were not disclosed.
- Company FF had the most economical fleet at AED5-10 per km, whilst Company QQ was the highest at AED13-14. Not surprisingly COMPANY GG paid their drivers the lowest (AED18,000) whilst Company JJ was the best pay master at AED25,000 per month.
- In season capacity was high among all suppliers, but Company FF only reported 70-80% utilisation. Whilst Company QQ stated March to April and November to December as peak months COMPANY GG had May to August and Company DD and Company BB had April to December as peak months.
- Customer requirements were similar to those using fixed cold storages
 - i) Products not be mixed with other products
 - ii) Cleanliness
 - iii) Products transported at the required temperature
 - iv) Truck capacity to be made available on request

a) **Company DD**

Operates a fleet of 30 freezer trucks ranging from 14.5 to 17.5 feet.

The company does not transport raw fish. This is due to contamination with other food. Having transported raw fish they used a chemical to clean the freezer trucks. However this has not been successful and they have received many complaints from buyers who have used Company DD trucks post transporting fish.

Charges to transport frozen meat: minimum charge

Minus 7C to minus 10C = AED9,750 for eight hours and AED730 per additional hour

Charges to transport ice cream

AED10,050 for eight hours and AED730 per additional hour

The company used to have a fleet of 11, 40 foot reefer containers for storage only. The company has sold off 10 reefer containers and is willing to sell the remaining container (-18C) for AED950,000.

Reefer Containers

- There are two types of reefer containers in the Country XY market, 20 footers and 40 footers.
- Demand for reefer containers are reducing due to increase in the number of fixed cold storages been built around the country and high rental costs. Several poultry producers stated that they prefer to rent two, 20 footers instead of one a 40 footer because of the high cost involved in renting 40 foot containerized reefers (sum of rent + demount + transport). However this is not consistent with the prices we received from suppliers (please refer below).
- Company PR and Company DD are moving out of the containerised reefer market. Company PR is selling their 9 year old 20 feet Carrier Brand container (-20C) for AED650,000 and their 9 year old 40 feet Carrier Brand container (-20C) for 950,000. Recently Company DD sold 10, 40 foot reefer containers. They have one reefer container remaining which they are willing to sell for AED950,000.
- Company LR has the following rental fee structure agreed with Company RQ.
 - i) Rental of 40 foot reefer container for on-site storage – Bananas – Company RQ. (including servicing) AED60,000 – AED75,000 per month

ii) Demounting (one-time charge) AED30,000 - 40,000

iii) Transport costs will depend on the distance

- Company JV have the following rental fee structure

i) 20ft container (-18C) - AED35,000

ii) 40ft container (-18C) - AED55,000

Electricity charges on the 40 foot container is reportedly about AED2,000 a day.

- Cost per km of was similar at COMPANY LR (AED13-14) and Ace (AED12-14). However driver salaries at COMPANY LR was between AED18,000-20,000 lower than Ace's AED25,000. Both companies identified March to April and November to December as their peak months.

Management at Company PR stated that

“...there is a need for cold storage among vegetable and fruit vendors at the City BD Economic Centre. However, they are less aware and less knowledgeable about the availability and benefits of such a service.

There is a need to educate them and make them aware of such a service. Less emphasis is given by the government in making buyers aware of the benefits of using refrigerated transport...”

The above was also highlighted by COMPANY LR .

b) Company PR

It was reported to us the companies is looking to move out of the refrigerated transport business. We inquired as to the reason they only stated that the group wished to focus on their core competencies.

3.0 Cost to construct a fixed cold storage

a) Cold storage room

Assets Economic life (years) <http://dcmsme.gov.in/publications/pmryprof/food/ch7.pdf>

1. Buildings 50-60
2. Machineries 15-20
3. Freezers 6

Investment cost	Rs.
Land	TBD
Building (to be confirmed)	4,950,000
Office and toilet	350,000
100T - Freezer Room -18C (For Meat, Fish)	17,000,000
Ante room - (source: Iceman Technologies)	200,000
3 phase / 60 amp electricity connection - to be paid to CEB	200,000
Investment cost	22,500,000
Annual fixed charges	Rs.
Depreciation (50 yrs) - Buildings	99,000
Depreciation (15 yrs) - Machinery	1,133,333
Interest (14%) - assumed 50% financed through bank debt	1,575,000
Insurance (10%)	1,700,000
Other	225,000
Total annual fixed charges	4,732,333
Annual operating costs	Rs.
Electricity costs (source: Iceman Technologies)	4,800,000
Service charges - machinery	225,000
Total operating costs	5,025,000
Total annual fixed and operating costs	9,757,333

b) Blast Freezer

Investment cost of a 500kg blast freezer, machinery and insulated room is AED4.5 million.

Annual operating costs		Rs.
<u>Electricity costs</u>		
KW per hour (60 horse power to freeze 1T)	22	
Operating hours per day	16	
Operating days per year	180	
Industrial cost per KW	<u>11</u>	
Electricity costs		708,725
Office work		110,000
Annual operating costs		818,725

c) Other

	Rs.
Construction cost for 25T to fish and 25T fruit storage	9,260,000
- Annual electricity cost	2,280,000
25T to store pharmaceuticals	
- Construction and installation cost	5,000,000
- Annual electricity cost (to be confirmed)	1,800,000

Source: Company TI

d) Timelines

- 2 months to import insulated panels. During this time the supplier constructs the building.
- 3 months to import refrigeration machinery
- 2 months to construct cold room building, install and commission machinery

Source: Company TI

4.0 Cost of Trucks

Outright purchase

The fish transporters stated that they prefer Brand SI vehicles due to its high mileage, good overall performance and attractive price. However they stated that they have experienced a shortage of spare parts.

1. BRAND SI 10½ foot ELF 150 4,700 cc = AED3.8 - 4.4 million

2. BRAND SI 12½ foot ELF 250 4,700 cc = AED4.2 – 4.8 million
3. BRAND SI 14½ foot ELF 350 4,700 cc = AED4.2 - 5.5 million (dual compressor – separate engine for cooling unit)

Maintenance (monthly approximate costs)

- a) Brand new vans AED5,000
- b) Reconditioned vans AED10,000
- c) Second hand (5 to 6 years old) AED25,000
 - a. Gas has to re-filled every six months
 - b. Compressor replacement
 - c. Replacement of senses
- d) Tyres costs depends on usage (on average one tyre can be used for 40,000 km)

Leasing of freezer trucks

Description	Vehicle price	Lease costs
Brand SI ELF 150, 10.5 fleet	AED3.3 million	AED78,500
Brand SI ELF 150, 10.5 fleet	AED4.0 million	AED95,000
Brand SI ELF 150, 14.5 fleet	AED5.5 million	AED130,500

Source: Company MLP

The lease period is five years and the company requires the vehicle to be kept as collateral. In the budget 2012, VAT on commercial vehicles has been removed.

Converting lorries to a freezer trucks

Iceman Technologies are the market leader in converting lorries to freezer trucks.

To install insulation body and refrigeration machinery onto a lorry;

Transporting fish – 10 foot truck – AED1.55 million (plus taxes) and 14 foot AED1.75 million (plus taxes). Transporting fruits – 10 foot truck – AED1.45 million (plus taxes) and 14 foot AED1.65 million (plus taxes)

5.0 Regulations

5.1. Chlorofluorocarbon (CFC) certification

Companies who maintain, service, repair, or dispose of refrigeration and air-conditioning systems containing CFCs must be certified by the Central Environmental Authority.

5.2. Food and pharmaceutical safety certification

Food and pharmaceutical safety assurance is provided by Hazard Analysis and Critical Control Points (HACCP). This is an internationally recognized certification. Having obtained HACCP certificate from the Country XY Standards Institution implies that chemical, physical and biological hazards encountered during production or processing of the food item, as applicable to the scope of certification are controlled to make the food safe for human consumption. Source: <http://www.slsi.lk/systems-certification-haccp.php>

All cold storages built by Company TI are considered to be HACCP compliant.

5.3 Storing and transporting pharmaceuticals is regulated by the Cosmetics, Devices and Drugs Act.

.... (2) No person shall store, sell, distribute, transport or offer for sale any drug without a license issued by the Cosmetics, Devices and Drugs Authority except a drug which in the opinion of the Minister is safe for general use and which is specified by regulations made under this Act.

(4) No person shall store or sell any drug in any premises unless such premises is licensed by the Cosmetics, Devices and Drugs Authority, except such drug which in the opinion of the Minister is safe for general use and which is specified by regulations made under this Act."