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# A Unique View

A Tank Terminal Market Analysis Framework

**Jacob van den Berge**  
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## Insights Global Conceptual Framework

This eBook gives insights into the applied market research methodology. The approach has been structured according to the Insights Global's (IG) tank terminal market analysis framework. This framework has been described in this eBook.

### Analysis framework

IG's Annual Tank Storage studies focusses on the commercial outlook and profitability of tank terminals located in the ARA & Singapore trading hub. We will disregard developments in operational expenses (OPEX) and capital expenses (CAPEX) because these two items are mostly specific for individual terminals and less for the general market.

When looking at the commercial performance of tank terminals the two main factors are:

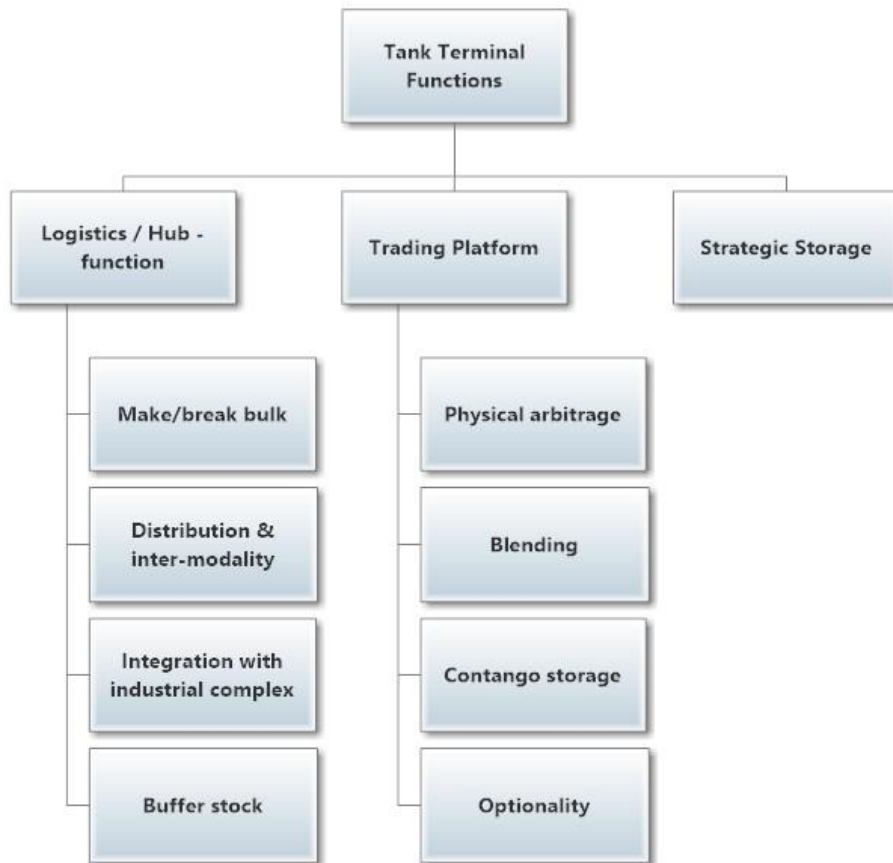
- I. Storage rates
- II. Occupancy rates

Storage rates are the price tank terminals get for renting their tank capacity and occupancy rates are the percentage of capacity that has been rented out to customers. Revenues for renting tank capacity are equal to the storage rate times the occupancy rate times the terminal capacity.

A tank terminal can have various functions for its clients. Figure 1 gives an overview of the main functions that a tank terminal can provide. A tank terminal can be needed for logistical purposes, as a trading platform and for strategic storage purposes.

In ARA they are likely to have a combination of these functions. Depending on market circumstances a terminal that functions excellent in certain high value segments can ask premium storage rates and will find enough demand to rent out its tank capacity. However, markets change and this can alter clients' requirements and shift profit potential and demand between market segments. To identify which market variables are relevant and how these variables influence commercial circumstances for tank terminals we have developed a conceptual model.

Figure 1: Functions of tank terminals



IG's conceptual model for tank terminal commercial performance is depicted in figure 2. The model shows relations between market circumstances and commercial performance. In this model market fundamentals drive market dynamics. A terminal that has a good fit to these market dynamics will find that their storage rates are supported. Apart from this direct relation between tank terminal characteristics, market dynamics and storage rates there is also a relation between market fundamentals and storage rates.

Figure 3 shows the structure of both market fundamentals and market dynamics applicable to the tank terminal sector. The distinction between market fundamentals and market dynamics lies mostly in the difference in rate of change. Market fundamentals tend to be more stable compared to market dynamics.

Furthermore, market dynamics have a direct relation to operational activities at tank terminals. This conceptual model has been used to structure our research. The main focus points are related to market fundamentals: logistics, forward curve outlook and competitive structure. You will find dedicated chapters on each of these subjects in this report. Furthermore, expected impact on market dynamics and corresponding tank terminal operations will also be discussed when appropriate and relevant.

Figure 2: IG's Tank Terminal commercial performance model

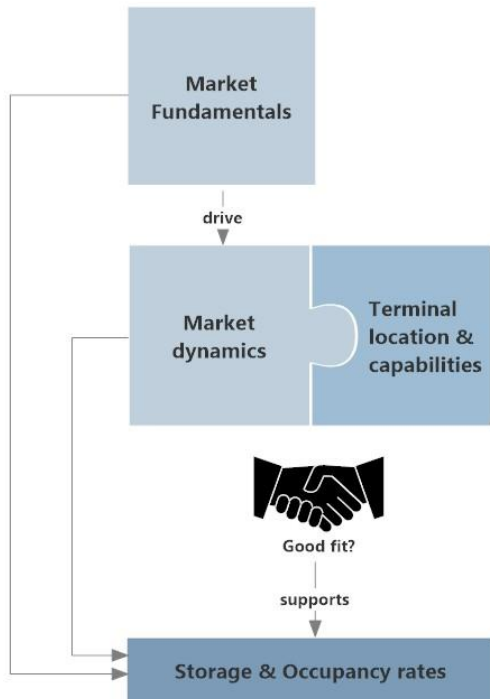
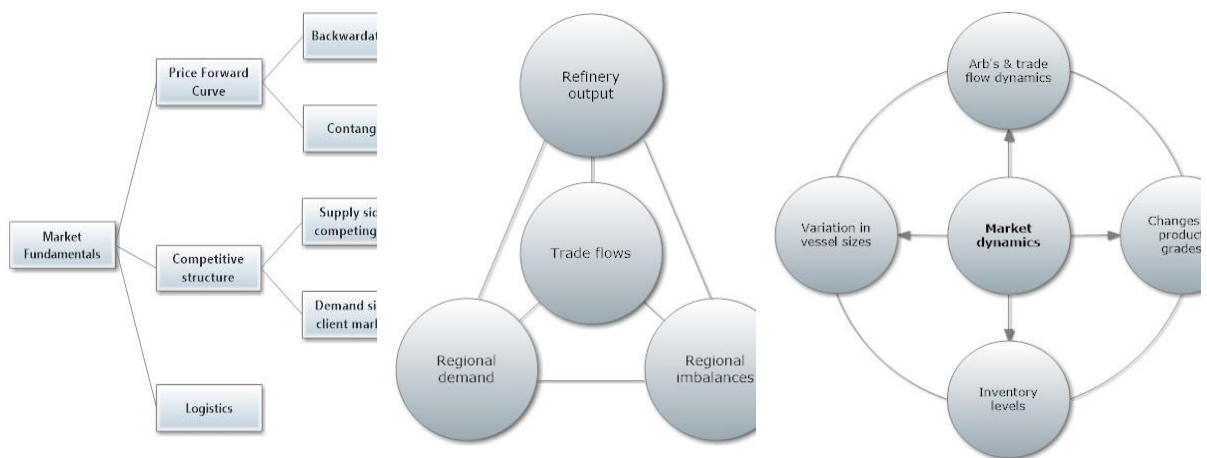


Figure 3: Detailed graphical representation of 'Market Fundamentals' and 'Market dynamics' as part of IG's conceptual model Tank Terminal commercial performance (left diagram: Market fundamentals; middle diagram: Market fundamental 'Logistics' in more detail; right diagram: Market dynamics)



## Market fundamentals

Relevant market fundamentals for the oil storage business are the shape of the forward curve, the competitive market structure and the logistical factors supply, demand, imbalances and trade flows.

The shape of the forward curve is determined on oil futures markets. The oil price forward curve can be upward sloping (contango) or downward sloping (backwardation). In a backwardated market is less demand for tank storage than in case of a contango. Inventory levels are also lower in a backwardation compared to a contango. Both demand and tank availability are therefore affected and this influences the commercial setting. How this works in detail is explained in chapter six which is dedicated to forward curve outlook.

The competitive market structure consists of a supply-side and demand-side market structure. Tank capacity and market shares of various terminal operators are key factors that determine the supply-side competition. The number of players, their size and diversity are key factors on the demand-side of the market. Both demand- and supply-side competition influence commercial performance of the terminals.

Tank terminals are part of the oil products supply chain and therefore logistical factors such as local product demand, regional refinery output, imbalances and trade flows are very relevant. Developments in these factors influence the demand and requirements for tank terminal capacity.

Inventories are needed at various locations in the supply chain to balance variations in supply and demand. Generally speaking inventory levels managed by suppliers should be set at sufficient levels in order to ensure proper service levels. The minimum inventory level needed for a certain service level is proportional to amongst others the volume that is supplied from that inventory point. Furthermore, strategic storage requirements are also proportional to oil product consumption levels. If consumption in a certain region is declining, as is the case in Europe, theoretically speaking less inventory is needed to balance variations in supply and demand and less is needed for security of supply reasons.

A situation that is related to both logistics and forward curves and does occur quite often is a global oversupply of crude oil and/or oil products. In this situation supply and demand are structurally out of balance and as a result inventory levels rise in order to balance physical oil markets. Tank terminal capacity is needed to store the excess product and to stimulate players to hold on to such inventories a contango price forward curve emerges. Because of the nature of the crude oil and oil products markets such periods of oversupply and contango tend to last for quite some time, sometimes lasting over three years. This requires a considerable amount of spare tank capacity.

If in a certain location or region there is an imbalance between refining output (production) and consumption, this difference will sooner or later be imported/exported from or to other regions. In order to facilitate these trade flows tank storage capacity is needed. The larger the imbalance, the more tank storage capacity is needed. If these trade flows travel over large distances, transport lots become larger in order to capture economies of scale and lower freight costs per ton. This also increases demand for tank storage capacity because tank-sizes are generally related to transport lot-sizes.

## Market dynamics

Relevant market dynamics are inventory levels, arbitrage and trade flows, changes in product specifications and variation in vessel sizes. These market dynamics have a direct influence on operations and on terminal requirements. A terminal that can accommodate and can adapt better and faster to these dynamics compared to competitors will likely show superior commercial performance. From the previous section you could already see that market dynamics are linked to market fundamentals.

The shape of the forward curve and global imbalances between supply and demand are both related to inventory levels. In an oversupply situation inventory levels are likely to rise and the forward curve is likely to be in contango. High inventory levels reduce tank capacity availability and create a shortage in the market. Furthermore, the contango supports storage rates. The other way around also applies: in a tight market inventory levels are low and the forward curve is likely to be in backwardation. Low inventory levels increase tank availability and the backwardation weighs on storage rates.

Arbitrage and trade flow dynamics and variation in vessel sizes are linked to each other and to logistical fundamentals. These relations have already been highlighted in the previous section. Changes in product grades are linked to fuel demand and fuel requirements, which is also part the fundamental 'logistics'. If a market requires more different grades of product more tanks are needed in order to segregate such grades. This supports demand.

## Contact Us For More Information

### **Jacob van den Berge**

Marketing & Sales Manager

**T** +31 (0)850 66 25 05

**M** +31 (0)6 28 34 87 84

**E** [jacob.vd.berge@tankterminals.com](mailto:jacob.vd.berge@tankterminals.com)

**Skype** pjk\_jacob.vd.berge

### **Aldo Cavalcanti**

Sales Executive

**T** +31 (0)850 66 25 23

**M** +31 (0)6 28 34 87 85

**E** [aldo.cavalcanti@tankterminals.com](mailto:aldo.cavalcanti@tankterminals.com)

**Skype** aldo\_cavalcanti

### **Greta Talmaci**

Marketing Executive

**T** +31 (0)850 66 25 21

**E** [greta.talmaci@tankterminals.com](mailto:greta.talmaci@tankterminals.com)

**Skype** greta.talmaci