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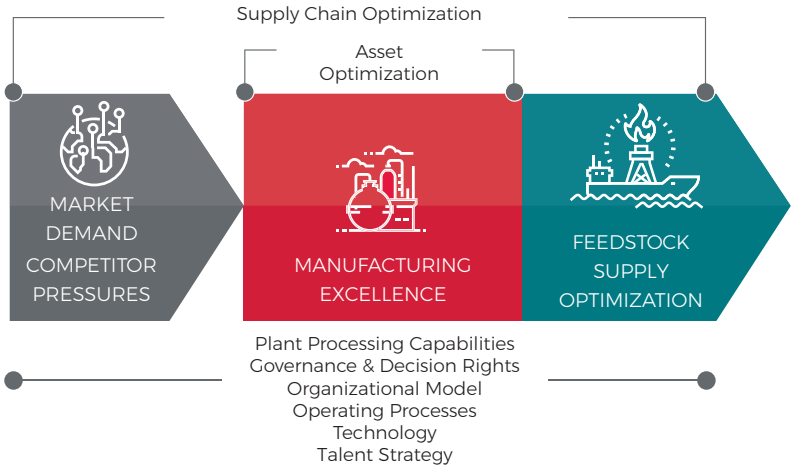
VALUE CHAIN OPTIMIZATION

Delivering significantly more revenue, at less cost with higher capital efficiency

The concept of value chain optimization is applicable across the Energy and Chemical industry and involves alignment of assets and the supply chains in which they exist.

"Alignment" is a mindset shift from inward orientation focused on "product" and own organizational needs, to outward orientation focused on market needs and customer experience. Only then can effective commercial optimization of the business occur. Value chain optimization is the activity that gives digitalization purpose – enabling the demand-pull business model. Value chain optimization's goal is to maximize return on capital employed (ROCE) as efficiently as possible. Value chain optimization is often the biggest factor in determining the profitability of assets.



MEASURABLE CHANGE IN PROFITABILITY

$602MM
OFFSHORE NORTH SEA PRODUCTION

$612MM
GULF COAST LNG LIQUEFACTION

$568MM
SOUTH AMERICAN REFINING

$70MM
SOUTH EAST ASIA AROMATICS

$30MM
US POWER GENERATOR

Your vision of the business should be one of an asset (or portfolio of assets) that exists in the context of, and is synchronized with, its supply chains and surrounding business environment. The whole asset together with the supply chain – not just parts of it – should continuously respond in unison to market signals, disturbances, such as ambient condition changes and optimize holistically on a real-time basis.

The outcome should be a fast-automated response to dynamically changing asset and market conditions.

E: INFO@KBC.GLOBAL / T: +1 281 293 8200 / WWW.KBC.GLOBAL

Assets need to be both operated (to maintain the status quo) and optimized (to improve). Across the Energy and Chemical industry, alignment of the following is necessary:

- Reservoir production potential with gathering system, top-side processing constraints and market demand
- Liquid supply with storage terminal constraints and market demand
- Gas supply with liquefaction plant constraints and market demand
- Crude feedstock supply with refinery operating constraints and market demand
- Chemical feedstock supply with manufacturing plant constraints and market demand
- Fuel sourcing with power generation asset constraints and market demand

Value chain optimization is an issue of your organization's market orientation, which itself is a function of:

- How well market intelligence is generated, disseminated and acted on
- Customer orientation and the extent to which customer value drivers are understood and addressed for superior customer satisfaction
- Competitor orientation and the extent to which strengths and weaknesses of existing and potential competitors is understood and acted on for superior customer satisfaction

Applied appropriately, value chain optimization allows rigorous adherence to operating plans and agile response(s) to market dynamics and asset disturbances. The main benefit of this is significantly improved economics, in terms of more revenue, at less cost with higher capital efficiency. Some examples of activities include:

UPSTREAM	DOWNSTREAM	POWER UTILITIES
OPTIMAL RESERVOIR MANAGEMENT AND FLUID COMPOSITION OVER TIME	IMPROVED FEEDSTOCK SELECTION	SCHEDULING MOST ECONOMIC DISPATCH FROM ACROSS MULTIPLE DIFFERENT GENERATION SOURCES
OPTIMIZED PRODUCTION ALLOCATION	HIGHER THROUGHPUT	IMPROVED ENERGY GENERATION EFFICIENCY
HIGHER FLOW RATE AND WELL PRODUCTIVITY	IMPROVED DISTILLATION AND PRODUCT YIELDS	MAXIMIZED ASSET GENERATION CAPACITY AND FLEXIBILITY
OPTIMUM FLOW ASSURANCE, E.G. ASPHALTENE, WAX, HYDRATES, NAPHTHENATES, SCALES	MINIMIZATION OF LOSSES	MINIMIZED TRANSMISSION AND DISTRIBUTION LOSSES
IMPROVED SEPARATION EFFICIENCY	IMPROVED ENERGY EFFICIENCY	MINIMIZED SUPPLY / DEMAND IMBALANCE
MINIMIZATION OF LOSSES	IMPROVED ON-SPEC PRODUCTION	STABLE PROCESS OPERATIONS
IMPROVED ENERGY EFFICIENCY	INVENTORY OPTIMIZATION	RELIABILITY, AVAILABILITY AND MAINTENANCE
IMPROVED PRODUCED WATER MANAGEMENT	PROCESS DEBOTTLENECKING	
PRODUCE THE LIMIT	STABLE PROCESS OPERATIONS	
GAS LIFT OPTIMIZATION	RELIABILITY, AVAILABILITY AND MAINTENANCE	
STABLE PROCESS OPERATIONS		
RELIABILITY, AVAILABILITY AND MAINTENANCE		

IMPROVED PROFITABILITY + **HIGHER CAPITAL EFFICIENCY** + **REINFORCED "LICENSE TO OPERATE"**

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Value chain optimization enables the asset and its respective supply chain(s) to operate at its true optimum, squeezing down on the gap between potential and realized, thereby creating more utility for the end customer and outmaneuvering competition. Furthermore, value chain optimization supports development of a motivated and informed digital workforce, and promotion of a culture of profitability.

Read the full Value Chain Optimization Manifesto here:
kbc.global/insights/whitepapers/value-chain-optimization-manifesto

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