PROCUREMENT
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Category Dossier

June 2021

Forklifts

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Table of Content – Slide 1

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Forklifts

Global Overview

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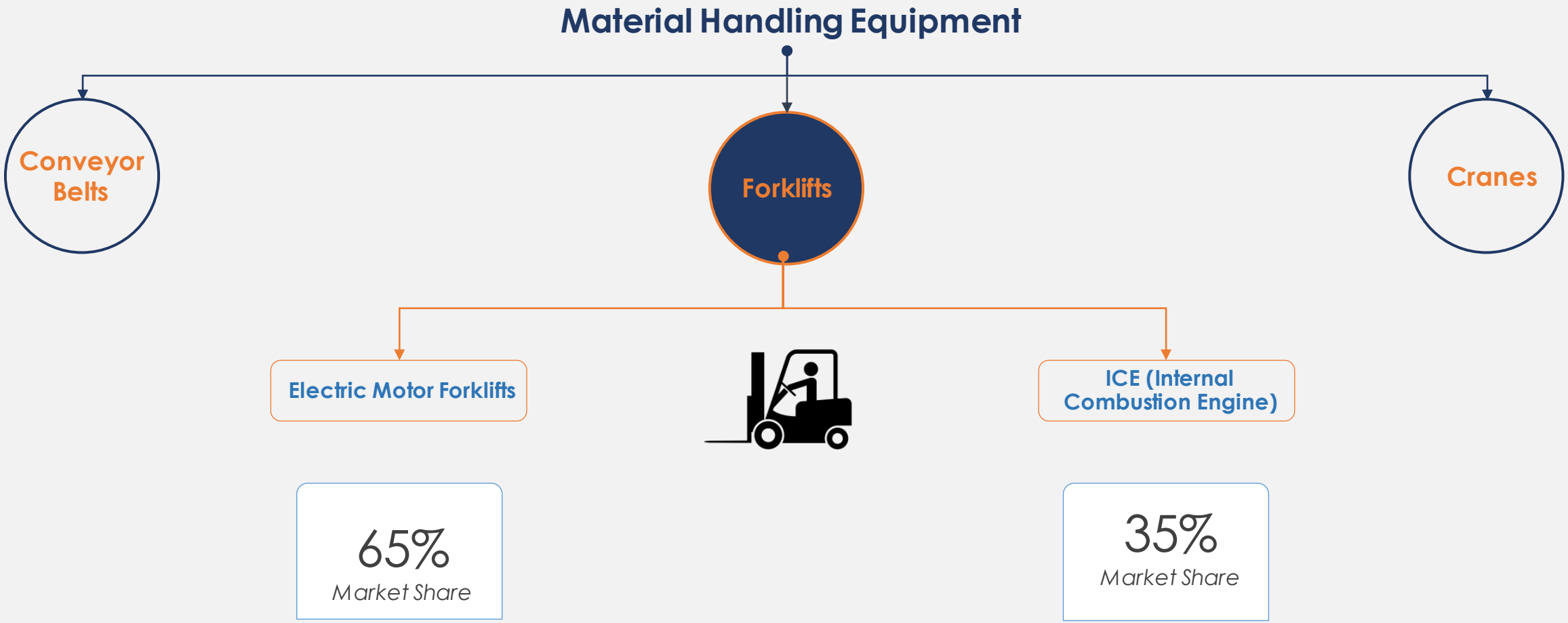
GEP views forklifts to gain increase prominence with a larger demand for electric forklifts (65% market share)

Forklifts : Category Landscape



- Material Handling equipment comprises of all equipment used in the movement, storage, protection and transport of material and products throughout the value chain from manufacturing, distribution and consumption
- Forklift trucks are motorized vehicles primarily used for independent lifting, movement, and placement of discrete loads throughout a facility

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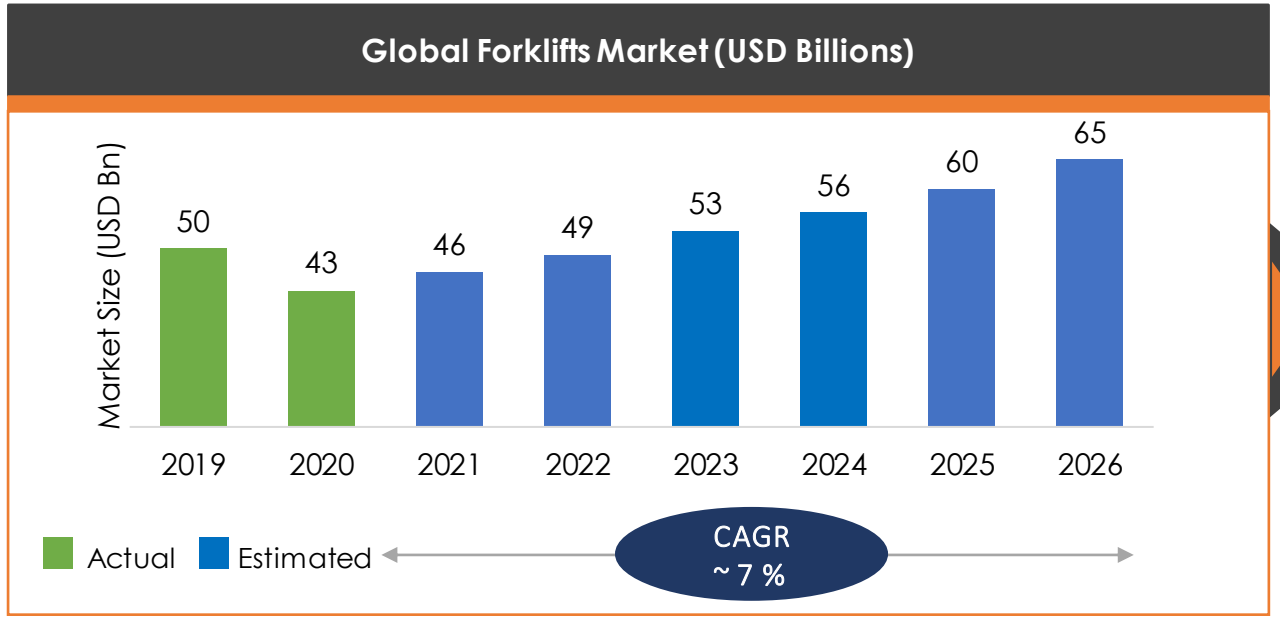
Global forklifts market is expected to see robust growth driven by increased demand from warehousing and booming e-commerce

Forklifts : Market Overview



Market Commentary

- The global Forklifts market size is estimated to be at USD 43 billion in 2020 and is expected to witness steady growth during the forecast period (2021-2026) after being negatively impacted in 2020 due to the Covid-19 pandemic
- Globally, the Forklifts market observed a downturn in H1 2020, as the manufacturers had to significantly slash down their production capacity due to initial measures taken by the government of various countries, such as lockdowns and movement controls to combat the COVID-19 spread, which indirectly resulted in a shortage of materials from suppliers in several countries
- However, the industry has bounced back in 2021, owing to the tremendous growth in e-commerce which is indirectly driving the growth of the global forklift trucks market

Key Drivers

1. Expansion of global warehouse space
2. Growing e-commerce business across the globe, giving rise to the concept of centralized warehousing.
3. Forklifts replacement demand in developed markets
4. Growing demand across construction & manufacturing
5. Bulk investments in purchase of low-cost forklift trucks in emerging markets

Market Outlook

- The forklifts truck market is likely to witness high growth in the Asia Pacific and North America regions due to its demand throughout several industries such as construction, mining, food & beverage and the presence of several big players in the region
- Post-pandemic, the industry is expected to have a positive outlook for market growth, the top global manufacturers adopting automation for improving their production capacity , and the robust developments in the e-commerce business

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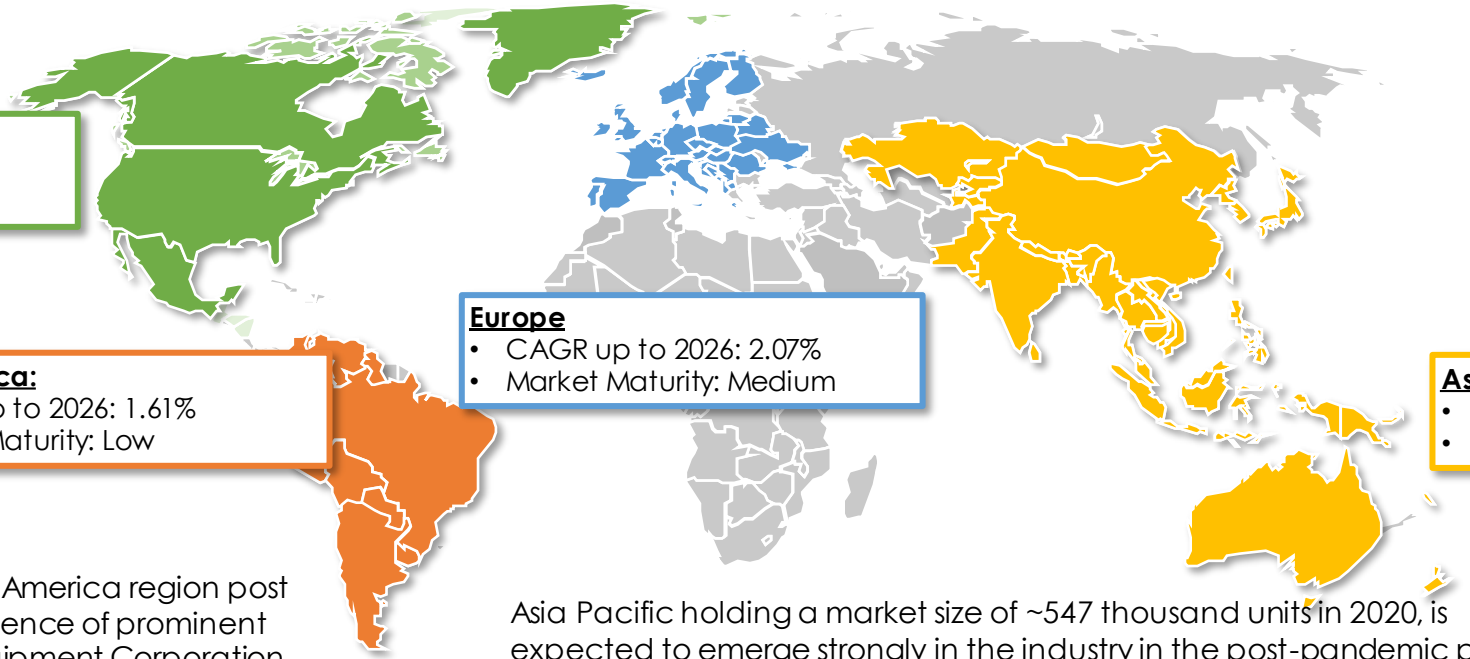
Increase in demand from Europe and Asia has led to decreased North America's dominant share in global forklifts market over the last few years

Forklifts :Regional Segmentation



North America
- CAGR up to 2026: 6%
- Market Maturity: High

Europe
- CAGR up to 2026: 2.07%
- Market Maturity: Medium

Latin America:
- CAGR up to 2026: 1.61%
- Market Maturity: Low

Asia Pacific
- CAGR up to 2026: 2.25%
- Market Maturity: Medium

1. The expected growth in the North America region post COVID-19, is attributed to the presence of prominent market players such as Crown Equipment Corporation, Hyster-Yale, etc. and the rising demand in the U.S. retail sector

2. Government investments for seaport infrastructure in UK and the development of e-commerce industry as well as the increase in construction activity in Europe, are the major factors driving the market growth in the region

3. Asia Pacific holding a market size of ~547 thousand units in 2020, is expected to emerge strongly in the industry in the post-pandemic period, owing to the demand for modern material handling equipment across sectors such as construction, mining, food, beverages, etc., in the region

4. Brazil and Argentina are major markets in Latin America market
The development of the e-commerce sector in Argentina is enhancing the growth of the forklift market in the Latin America region.

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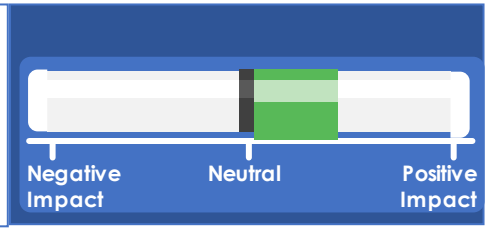
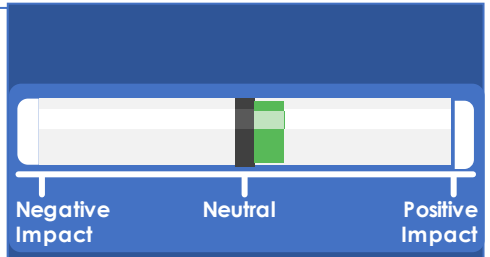
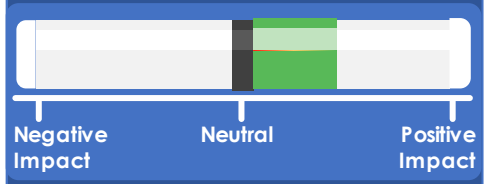
Latest innovations include smart forklifts and integration of connected forklift systems with Warehouse Management Systems and Manufacturing Software

Forklifts: Megatrends (1/2)

Trends	GEP PoV	PROCUREMENT IMPACT
Smart Forklifts	• With Industry 4.0 and the Smart Factory concept, automation and intelligence is set to pervade the forklifts business. • Smart Forklifts include diagnostics that allow the forklift equipment to signal service requirements, speed controls, anti-slip technology that monitors wheel spin and improves the traction on slick floors, collision detection, forklift speed optimization and many other functions	
Automation/ Semi-Automation of handling activities	• Since, labor constitutes a significant component of forklift operational costs, and the recent increase in forklift driver costs in the US is driven by increasing warehousing demand, automation will help to control costs in the long term. • Currently, semi-automation such as conveyors and similar systems are preferred by facilities to minimize the forklift operations. • Automation will lead to higher production rates and increased productivity, better product quality, improved safety	
Integration of Intelligent Forklifts with Warehouse Management Systems	• Intelligent forklifts enable new process flows in warehouses. Sensor enabled forklifts integrated with the WMS systems (Warehouse Management Systems) increase the speed of the fork for raising and lowering operations. • Intelligent forklifts through sensor technology have accurate details for pallet location. Through console-based control, these forklifts operate at maximum safe speed , a speed considerably higher than the one from manual operator control. • Further, speed controls can ensure safety of operations for the intelligent forklifts. E.g. RFID tags on floors can signal about busy areas of warehouse with people • However, implementation of such integration will require significant investments and time. Current Warehouse Management & Control systems architectures are not designed to be compatible with intelligent forklifts. Reconceptualization of WMS and WCS systems to enable efficient warehouse operations will be imperative in future.	

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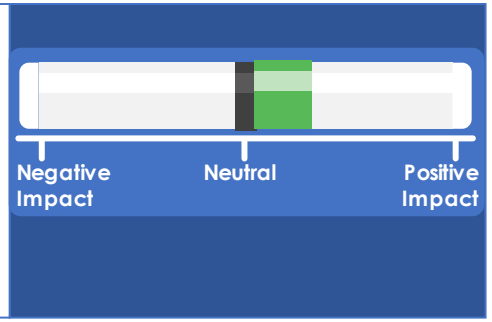
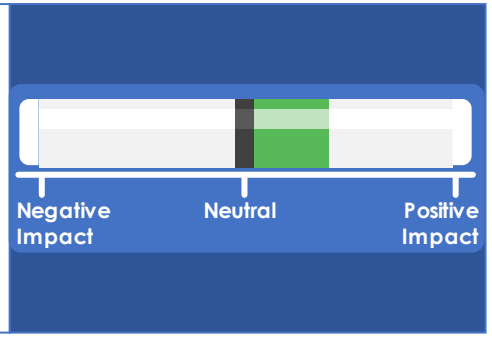
Ecommerce is driving demand for Class 2 & 3 forklifts; globally overall forklifts sales of electric type has surpassed ICE forklifts

Forklifts : Megatrends (2/2)

Trends	GEP PoV	PROCUREMENT IMPACT
High demand for Class 2, 3 Lift Trucks driven by ecommerce	• Global ecommerce segment is expected to grow at an impressive CAGR of ~10%-13% up to 2022. Increase in ecommerce and resulting demand for warehousing is driving demand for forklifts in the retail and distribution sector. • Class 3 lift trucks (smaller electric ones used for indoor warehousing) saw a 14% rise in orders and 16% rise in shipments in 2020 as against 2% growth noted for Class 4,5 (counterbalanced trucks) • Market share of warehouse lift trucks (Class 2,3) has increased from 42% to 45% from 2019 to 2020. Experts expect a 3% annual rise in market share from 2021 to 2023.	
Growing sales of Electric Forklifts and decline in sales of ICE ones	• Globally sales of electric forklifts continue to surpass ICE forklifts with electrics accounting for 62% of all sales. • Mature markets such as Americas and Europe higher adoption of electric forklifts while demand in emerging markets (Latin America) and Asia is still primarily for ICE forklifts. • Further, the ecommerce and warehousing demand in future will mainly require electric forklifts	

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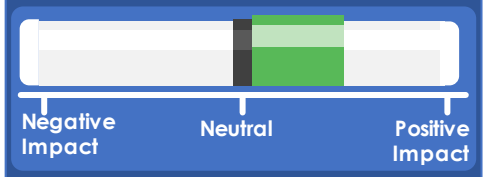
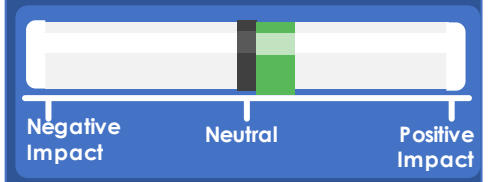
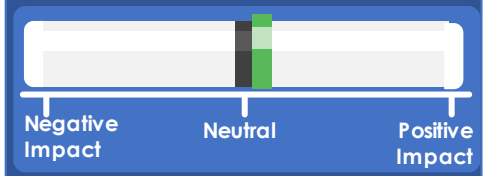
Increase in adoption of technology like lithium ion - technology, Automation, etc is the rising trend in the Global Forklifts industry

Update

Forklifts : Technology Megatrends (1/1)

Trends	GEP PoV	PROCUREMENT IMPACT
Electric-Powered Forklift Trucks Gaining Popularity	**TREND :** • Increase in warehousing and logistics activities due to surge in E-Commerce business has aggravated demand for electric forklifts, globally, as Electric forklifts have a higher operational efficiency , constitute reduction in labor requirement and is a great substitute to deal with increasing fuel prices and stringent environmental protection policies. **CASE REFERENCE :** • As the Chicago government regulations are advocating materials handling companies to innovate environment friendly and efficient materials handling vehicles, the Hyster-Yale Material Handling Group, headquartered in Ohio, US, announced new counterbalanced electrical forklift truck with a factory-integrated lithium-ion battery pack.	
Shift from lead acid batteries to lithium ion - technology	**TREND :** • A shift from larger lead acid batteries to smaller lithium ion (Li-ion) batteries is providing suppliers the opportunity to redesign key components of the truck. • Also, since Lithium-ion technology makes it feasible for one battery to power a forklift for multiple shifts, which indirectly reduces labor and equipment costs. **CASE REFERENCE** : • In 2020, KION Group Started production of lithium-ion batteries for industrial trucks. The Key objective was to meet the demand for lithium-ion battery systems in the intralogistics market.	
Increased need of automated lift trucks	**TREND :** • The pandemic has accelerated the need of robotics and use of automated lift trucks as well as other types of materials handling automation in order to increase the efficiency and reduce the labor cost **CASE REFERENCE** : • In May 2021, Toyota Industries Corporation partnered with Third Wave Automation, to Create Next Generation Autonomous Material Handling Vehicles	

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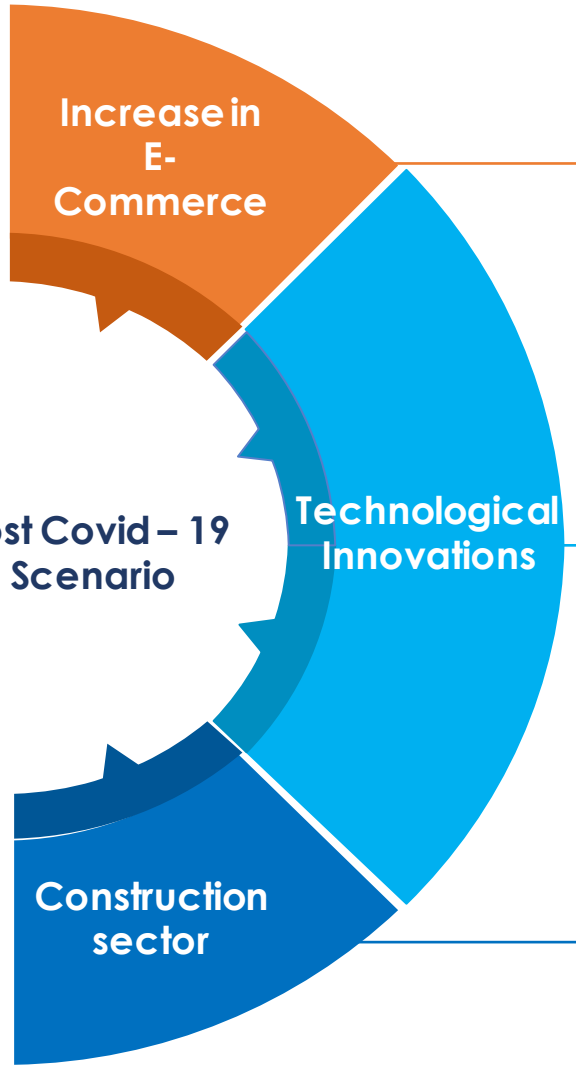
Increase in E-commerce business, technological innovations, etc. are some of the changes that will be witnessed by the Forklift industry in a post Covid scenario

Forklifts : Post Covid - 19 Scenario

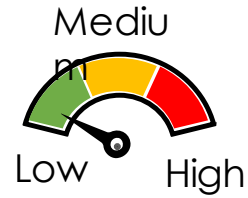
New Slide



Increase In E-commerce Business

The Pandemic resulted into faster adoption of e-commerce, for consumers. Therefore, post COVID -19, a boom in the e-commerce sector will result into acceleration of demand for forklifts as the companies have started making investments in electric and autonomous forklifts, for usage in warehouses, to fasten up picking, loading, and material transfer processes.

Impact Post COVID-19

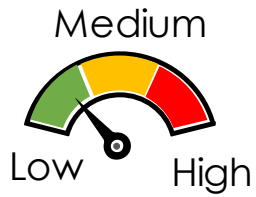


Technological Innovations

In order to implement contactless, self-driving systems, manufacturing companies are trying to get edge over competitors by adopting technological innovations such as robotics and the industrial internet of things (IoT)

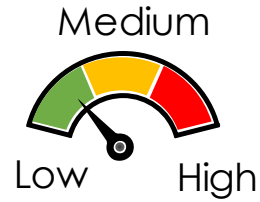
CASE REFERENCE :

- In April 2020, Toyota Material Handling introduced 4-wheel electric lift trucks, with 3,000 and 3,500-pound capacity models designed to boost both productivity and uptime.
- In June 2020, Hyster-Yale Material Handling Group, headquartered in Ohio, US, announced new counterbalanced electrical forklift truck with a factory-integrated lithium-ion battery pack.



Increasing activity in construction sector

Increasing investments in construction sector in order to develop infrastructure will drive the forklifts market growth post pandemic. Forklifts are used to take up the heavy construction materials across rough terrains. Thus, a rise in the construction sector will lead to rise in demand of forklifts.



Source: GEP Analysis, Experts, GEP SME, Secondary Research

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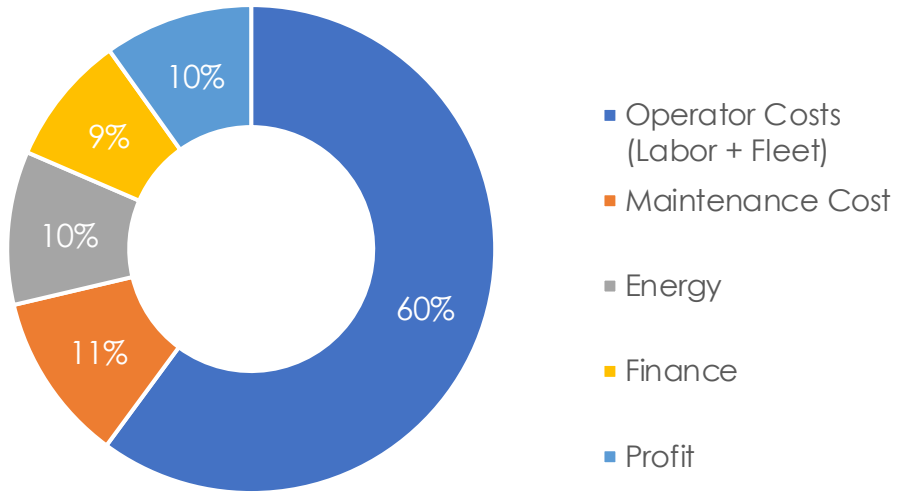
With semi-automation and automation of forklift operations, major component of ownership and operation cost is expected to decrease in terms of percentage

Forklifts: Key Cost Drivers

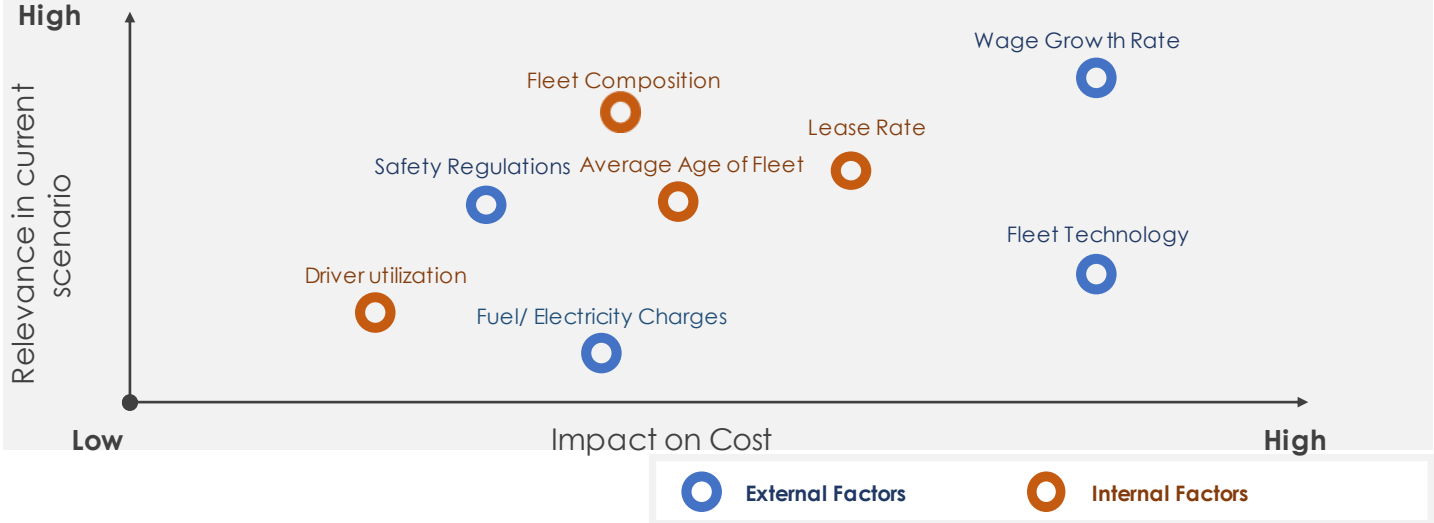
Operator Costs which include labor and fleet management accounts for major of the ownership cost of forklift

Cost Break-up



Note: The Cost of Ownership is based on annualized

External and Internal Drivers



Operator Costs
Comprises of driver wages, and administrative costs for fleet management. Key factors affecting this component is driver utilization, and fleet performance targets.

Maintenance
Both preventative and repair maintenance depends on the average age of the fleet and fleet composition.

Energy
Energy charges comprises of fuel costs or electricity costs depending upon the mode of operation

Finance
This component comprises of annualized cost in case of a buy model or lease in case of lease and insurance costs

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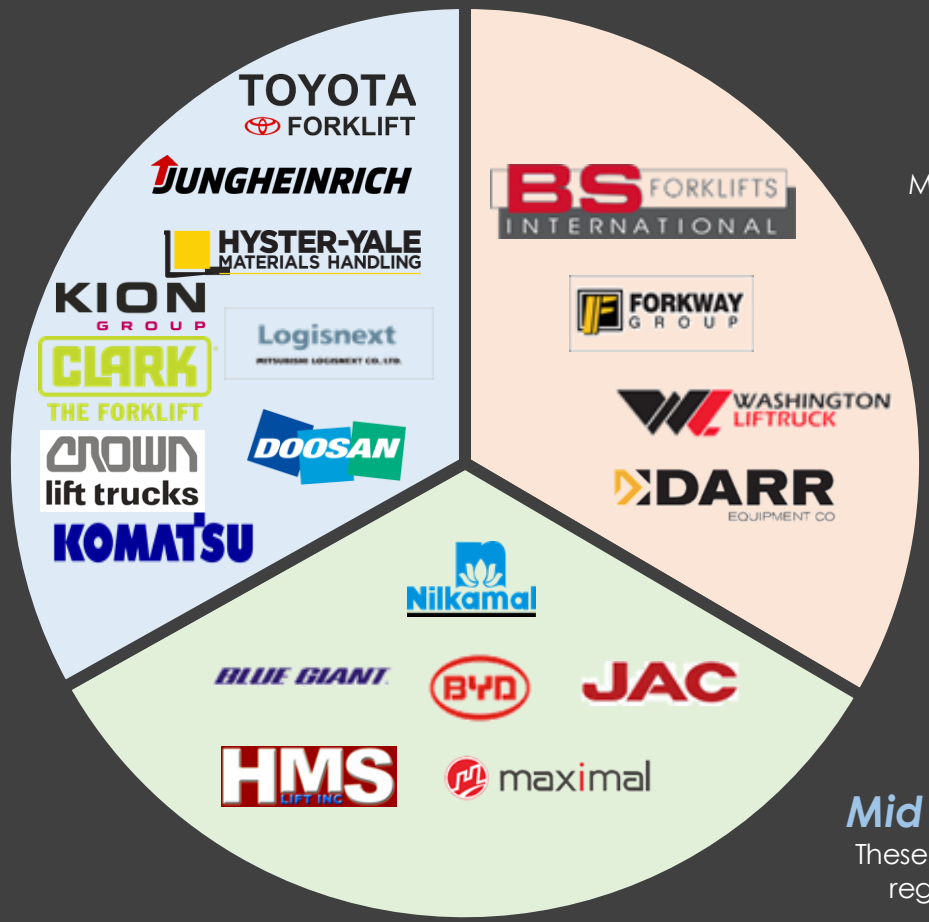
The supply base for the category can be classified into three different groups based on the breadth of their product portfolio

Forklifts : Supplier Segmentation

Large Global Manufacturers
These are large scale manufacturers with global presence



Distributors/Dealers
These suppliers are dealers of select OEMs. Some OEMs have exclusive dealers .
Most dealers offer forklifts from multiple manufacturers

Mid & Small Scale Manufacturers
These are local/regional forklift OEMs with limited regional presence (one country or a region)

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Sourcing managers must carefully understand the segment attributes before narrowing down their preference to one segment

Forklifts : Supplier Segment Characteristics

Buyer Decision Making
Supplier Traits

1 Large Global Manufacturer

Pros:

- Majority of the global players are industry leaders offering best in class products & services
- Wide portfolio (multiple brands) of forklifts including additional services such as intralogistics services, etc.
- Higher technical capability
- Ability to serve global sourcing requirements (Global reach)

Cons:

- Preferred for large requirement
- Pricing is high compared to local manufacturers

2 Mid and small scale Manufacturer

Pros:

- Offer pricing advantage over large global manufacturers
- Offer contractual flexibility compared to large players

Cons:

- All local manufacturers do not necessarily comply with Safety Standards
- Rated lower on Quality and long term performance metrics compared to large scale manufacturers

3 Distributors/ Dealers

Pros:

- Offer forklifts from multiple OEMs providing variety and choice for buyer
- Provide significant price advantage for mid-small scale requirement
- Ideal for used forklift requirements
- Relatively higher contractual flexibility

Cons:

- Limited additional services offerings

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GEP considers these parameters as important for buyers to consider before finalizing any decisions related to suppliers

Forklifts : Buying Decision Facilitation (Global)

Buying Decision Factors	Global Hardware Specialists	Global Device Specialists	Regional Specialists
Global Presence	Very Strong	Moderate	Weak
Portfolio Offering (Forklifts plus additional services)	Very Strong	Moderate	Strong
Portfolio Diversity (Number of Brands offered)	Strong	Weak	Very Strong
Energy Certifications	Very Strong	Moderate	Strong
After Sales services	Moderate	Strong	Strong
Long term performance/Durability	Very Strong	Moderate	Strong
Contractual & Commercial Flexibility	Moderate	Strong	Very Strong
Adherence to International Safety Standards	Very Strong	Moderate	Strong

Evaluation Criteria

Very Weak | Weak | Moderate | Strong | Very Strong

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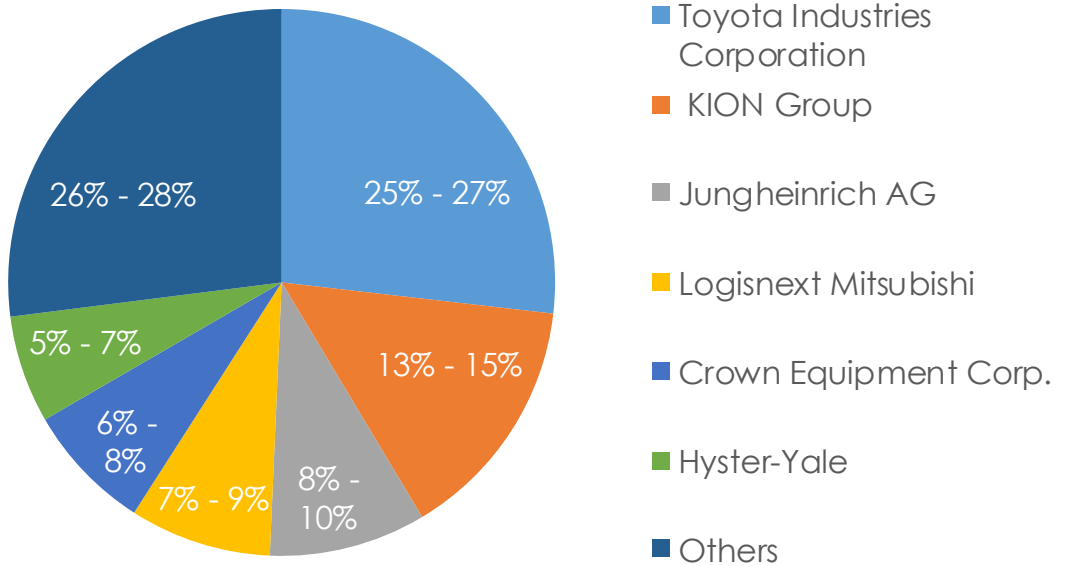
Global forklifts market is highly consolidated. Intense competition and M&A have changed supplier rankings

Forklifts : Supplier Share of the Category

- Global market for forklifts is fairly consolidated with top 5 players dominating the global market with ~70% market share
- Most of the suppliers are diversified players offering Forklifts under the Material Handling business unit and offering additional services for MHE & forklifts
- Toyota and Kion group retain their 1st and 2nd positions globally
- Jungheinrich AG has replaced Logisnext Mitsubishi at No. 3, while Crown Equipment Corp and Hyster-Yale, occupy the 5th and 6th positions globally
- Japan based Toyoto, Mitsubishi and Komatsu and South Korea based Doosan, Clark and Hyundai Heavy are in top 20 globally.
- The new manufacturer entrants in the Global Electric Forklift market are finding it hard to compete with the international vendors based on quality, reliability, and innovations in technology.

Toyoto , KION, Mitsubushi Logisnext, Jungheinrich are leading suppliers

Market Share of Forklifts



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Market share of the category seems to be consolidating among the 'Top Six' – Toyota, Kion, Mitsubushi Logisnext, Jungheinrich, Crown and Hyster-Yale

Forklifts : GEP Perspective on Representative Suppliers

Supplier	Offering Overview	Presence	Why Partner?	Risks
TOYOTA FORKLIFT	• Toyota Industries provides an excellent portfolio of services and products with a strong presence globally • Offering: electric, ICE lift truck, Automated storage and retrieval system, Aerial work platform, Reach-type electric lift truck, AGV (Automated Guided Vehicle)	Global - Americas - EMEA - APAC	• Strong Market Position -Forklifts ✓ Global Rank No. 1 For 15 consecutive years • Global reach and distribution network • Broad lift trucks portfolio (Multiple brands: Toyota, Raymond, BT, Cesab) • Extensive service and support offerings	• Restrained Capital investments • Fluctuation between Dollar/Yen & Euro/Yen
KION GROUP	• Forklift trucks, warehouse equipment, and industrial trucks • Kion operates across the four segments of Linde Material Handling (59%) STILL (forklift trucks and warehouse trucks; 32%), Financial Services (8%), and Other (1%).	Global - Americas - EMEA - APAC	• Strong Market Position -Forklifts ✓ Global Rank No. 2 ✓ Europe Rank No. 1 • Global 3: in supply chain solutions • Strong positioning for ecommerce material handling through acquisition of Demantic	• High concentration of forklifts business in Europe makes the company prone to regional regulations
Logisnext MITSUBISHI LOGISNEXT CO., LTD.	• Development, design, manufacture and sales of electric and engine-powered forklifts, transportation robots, automated warehouses, LAN and other logistics equipment and systems, electric vehicles, and monorails.	Global - Americas - EMEA - APAC	• Strong Market Position -Forklifts • Global Rank No. 4 • Europe Rank No. 2 • Strong R&D • Business focus solely on Forklifts and Forklift after sales services provides significant advantages from specialization	• Liquidity Position • Overdependence on Western Europe & Germany • Single Brand Strategy

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Market share of the category seems to be consolidating among the 'Top Six' – Toyota, Kion, Mitsubushi Logisnext, Jungheinrich, Crown and Hyster-Yale

Forklifts : GEP Perspective on Representative Suppliers

Supplier	Offering Overview	Presence	Why Partner?	Risks

CROWN lift trucks	• Forklifts
	• Automation Solutions
	• Fleet Management
	• Financing options
	• Warehouse Solutions
		Regional
		• APAC
		• U.S
		• Europe
			• **Strong industry credibility with innovative customers:**
			  • 60% of Forbes Top 50 Innovative Companies
			  • 88% of Fortune 500 Companies
			• **Strong Manufacturing base:** It designs and manufactures 85% of its lift truck components including key parts like motors, drive units, and electronic modules
				• Less presence in Asia, one of the major growing markets of forklifts

HYSTER-YALE MATERIALS HANDLING	• Electric and ICE lift trucks
	• Comprehensive global proprietary and "all-makes" service parts program
		Global
		• Americas
		• EMEA
		• APAC
			• Hyster® and Yale® are among the most recognized brands in the lift truck industry.
			• Strong Market Position -Forklifts
			  ✓ Americas Rank No. 1
			  ✓ Global Rank No. 4
			• 80 years of experience
				• Limited Local presence in Eastern Europe

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Preferred Supplier Engagement with a single supplier and lumpsum pricing for maintenance are best sourcing strategies

Forklifts : Negotiation Levers & Quick Wins

Negotiation levers/ Quick wins		
Volume Consolidation across plants, regions	Spend Based Rebates	Incumbent Discounts for new equipment and on spares of existing forklift
Best practices in Engagement		
Preferred Supplier Engagement	Global Umbrella Contracts	
Pricing Models		
Lump Sum-Maintenance	Time & Material-Maintenance	
KPIs/SLAs		
Equipment Down Time (<3%)	Preventative Maintenance Compliance >96%	GPS tracking to pinpoint the exact location of the incident (<5% deviation)
Contractual benchmarks		
Large clients prefer a Preferred Supplier arrangement with a Single Supplier	90-120 days of payment terms	<6 years of lease period

Sourcing Best Practices

- Annual support and upgrade costs grows exponentially as the equipment ages
- Sourcing managers should consider shorter leasing periods in place of ownership model as it reduces the overall spend
- Leasing improves the Return on Capital for organizations as it minimizes the capital assets

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Forklifts

Negotiation Pack

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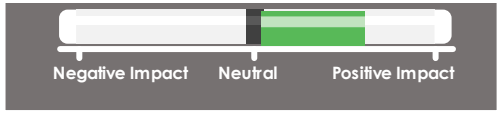
Forklifts industry has evolved significantly over the last decade with increased usage of fuel cells, automation and digitization

Forklifts : Impact Analysis

Drive technologies

2000s

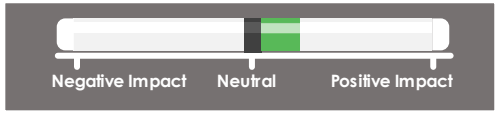
- Early 2000s marked the introduction of drive technologies .
- In 2000, Linde introduced the first prototype of fuel cell forklifts.
- The period marked introduction of other drive technologies, such as diesel-electric hybrid drives and lithium-ion batteries.



Autonomous Forklifts

Present

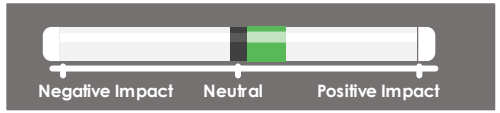
- Forklift trucks are learning how to communicate with each other and even how to operate autonomously
- Modern trucks are fitted with sensors and electronics that deliver a constant stream of data to fleet management systems such as Linde connect:



Intralogistics 4.0

Future

- Industry 4.0 and digitization is set to disrupt the Logistics infrastructure through end-to-end system solutions for automated and networked warehouses.
- Forklifts enabled with sensors, IoT and networked monitoring will be the future trend



Outcome should be net effect /current state based on…..

Risk

Procurement from low cost manufacturers and countries will be riskier with increase in automation and technology improvements

Pricing

Though initial pricing may be higher, TCO reductions are expected with automation in operations

Ease of sourcing

Easy of Souring will have a medium impact with integration across multiple systems

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Adoption of alternative pricing models, appropriate supplier selection and staffing mix is key to trim cost & optimize process

Forklifts : Typical Sourcing Challenges

1 Lease vs Buy &Refurbished

- Key Sourcing decisions such as Lease vs. Buy, and use of New or Refurbished Equipment are key decision factors that seem challenging to most buyers
- Both leasing and use of refurbished equipment provides several cost reduction opportunity

2 Controlling Planned Maintenance

- Between planned and reactive maintenance, it is difficult to manage planned maintenance
- While full-service contracts ensure complete offerings, they are a costlier option

3 Measuring TCO

- Since operational costs constitute a major component of overall cost of ownership of equipment, a TCO based approach is recommended for sourcing forklifts
- However, measuring TCO with reasonable accuracy remains a challenge

4 Critical spare supplies

- In general compatibility of spares across different OEMs is less
- Therefore, ensuring suppliers of spares from the same OEM becomes crucial
- With large demand from distributors sometimes buyers face shortage or higher lead times in delivery

5 Fleet Management

- Fleet Management services are provided by top class global suppliers
- However, with regional suppliers and local distributors this becomes a challenge
- Fleet Management directly impacts total costs and efficiency of operation

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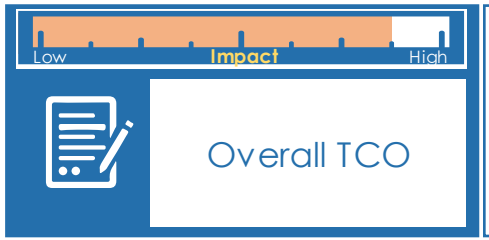
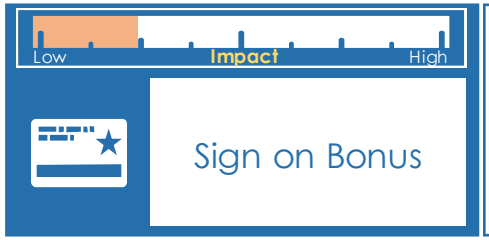
TCO based approach and volume consolidation provide significant scope for cost reductions

Forklifts : Negotiation Levers (1/1)

- For large global organizations, it is recommended to have consolidate volumes across regions with a single supplier or at least all volume in a single region with a single forklift supplier.
- Standardization of demand across multiple plants will help in plant wise and regional volume consolidation



- Since the operational costs of forklifts are high over the usage period or lifecycle, a TCO (Total Cost of Ownership) based approach will help to evaluate all cost components such as operator rates, energy costs, maintenance costs, etc.
- A TCO based approach may not favor a low purchase cost approach



- Most suppliers agree to a sign-on bonus, especially when the number of trucks is any more than 250 trucks on a regional/global level. The amount of bonus can depend on the total commodity spend and can range from 0.5% to 1% of the total spend.

- Spend varies every year when the forecasts are not consistent and there are far more breakdowns & maintenance issues, this can help organizations leverage such rebates
- This is highly recommended for short-term leases or when there are significant breakdowns and maintenance issues that haven't been covered by preventive maintenance and warranty

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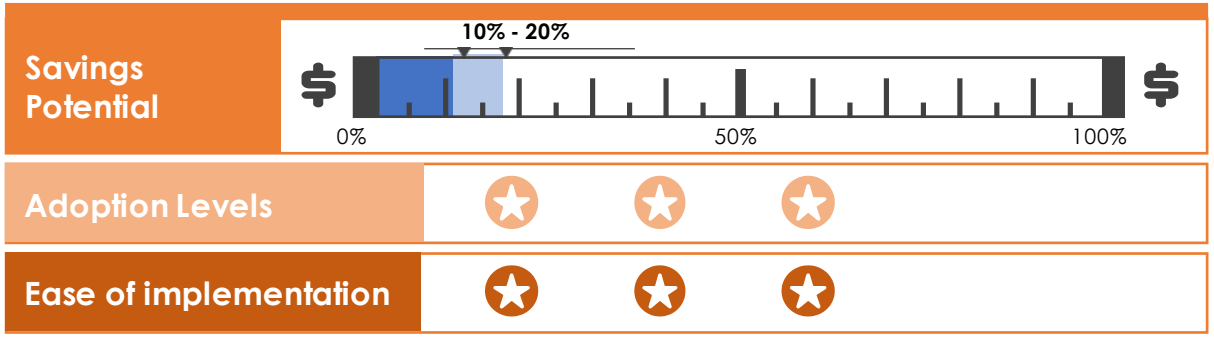
Volume consolidation along with a TCO based approach provide savings; Leasing provides significant scope for cost reduction

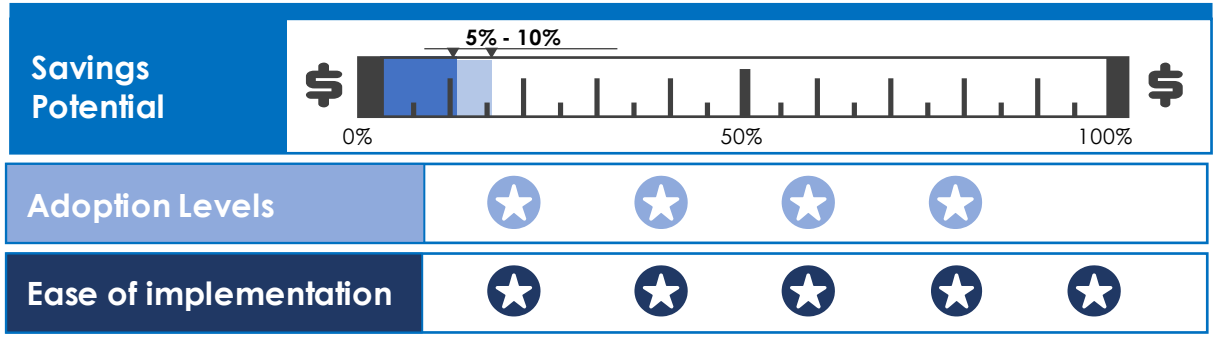
Forklifts : Key Insights on Top Negotiation Levers

Volume Consolidation & TCO approach



- Consolidation of Volume across all plants/ warehouses in a region is generally preferred. If possible, consolidation at global level is recommended.
- Standardization of demand across multiple plants will help in plant wise and regional volume consolidation
- Further adopting a TCO(Total Cost of Ownership) based approach is preferred to over low initial cost of purchase cost
- Generally it is observed that low initial costs often result in higher operating costs in terms of fuel/ energy usage and maintenance

Incumbent Discounts



- In general attaining 10-12% savings on overall Forklifts fleet is feasible
- If the new equipment has been leased/ rented from an incumbent, fruitful savings can be negotiated for the current term while the new equipment is in the process of being delivered,
- For engagements, where current incumbent is awarded the contract for new forklift fleet, discounts can range as high as 30%-50%. This can be a significant savings for the duration of turnaround time (approximately eight weeks) when the old fleet is replaced by the new fleet, or while waiting for the end of the contract.

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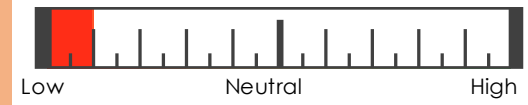
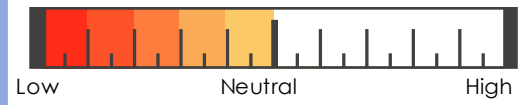
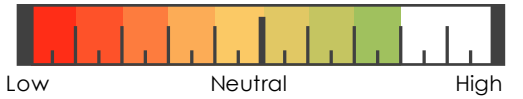
Large established companies with mature forklifts portfolio favor a Preferred Supplier arrangement

Forklifts: Engagement Models – By Number of Suppliers (1/2)

	Single Supplier	Mixed (Multiple) Supplier	Preferred Supplier
Adoption Levels			
Definition	An MHE firm provides all of the forklifts to the company	In this model multiple suppliers, generally (2-3) provide forklifts with no preference for a single supplier	Companies have a set of preferred suppliers at a global or regional level
Scenarios /Fitment	This is best suitable for a smaller requirement where the demand and needs are well defined and standardized	This is suitable for varying demand where forklifts of different manufacturers may cater to different requirements	Most large established companies with mature forklifts portfolio have a preferred supplier at a global or regional level
Advantages	• More manageable as companies have one agreement and one line of contract • The client has more say in the engagement with service and spares	• A mix of regional or local suppliers will be cheaper than a single firm • Opportunity for companies to choose the best supplier for each practice area	• Preferred suppliers are generally top global players. • Preferred suppliers deliver the best overall value to clients on quality and safety and overall long term performance.
Disadvantages	• Relying on a single supplier / distributor may limit availability of type of forklifts and affect cost control initiatives • Also, supply and spares are risky with reliance on a single OEM	• It is difficult to manage large number of suppliers • Client's operational risk is high because it delegates responsibility to several suppliers	• Preferred vendors might not have enough resources allotted for an account and this could prove as a hindrance during peak seasons • Sometimes preferred vendors may not be the best fit

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Large established companies with mature forklifts portfolio favor a Preferred Supplier arrangement

Forklifts : Engagement Models –By Regional (2/2)

Local Strategy	Random	Aggregation of demand across few plants in the year of expiration of current contract
	Plant	Aggregation of trucks in a plant and accordingly sourcing for spares
	Hybrid	Demand from maximum plants aggregated before a fixed date
Intermediate Strategy	Country	Aggregation of all plants in a country (provision of spares based on total demand)
	Bi-annual	Aggregation of demand across few plants bi-annually
	Umbrella	Global Contract with fixed distinction on country level and future improvement plan
Global Strategy	Contract	Aligned contract of all countries. Separate contract per duration (3/4/5/6 years)
	Quota	Renewal of approx. $1/5^{th}$ or $1/6^{th}$ of the fleet per year at a global level
	Aligned	Single contract of 5–6-year duration globally with same expiry date for entire fleet

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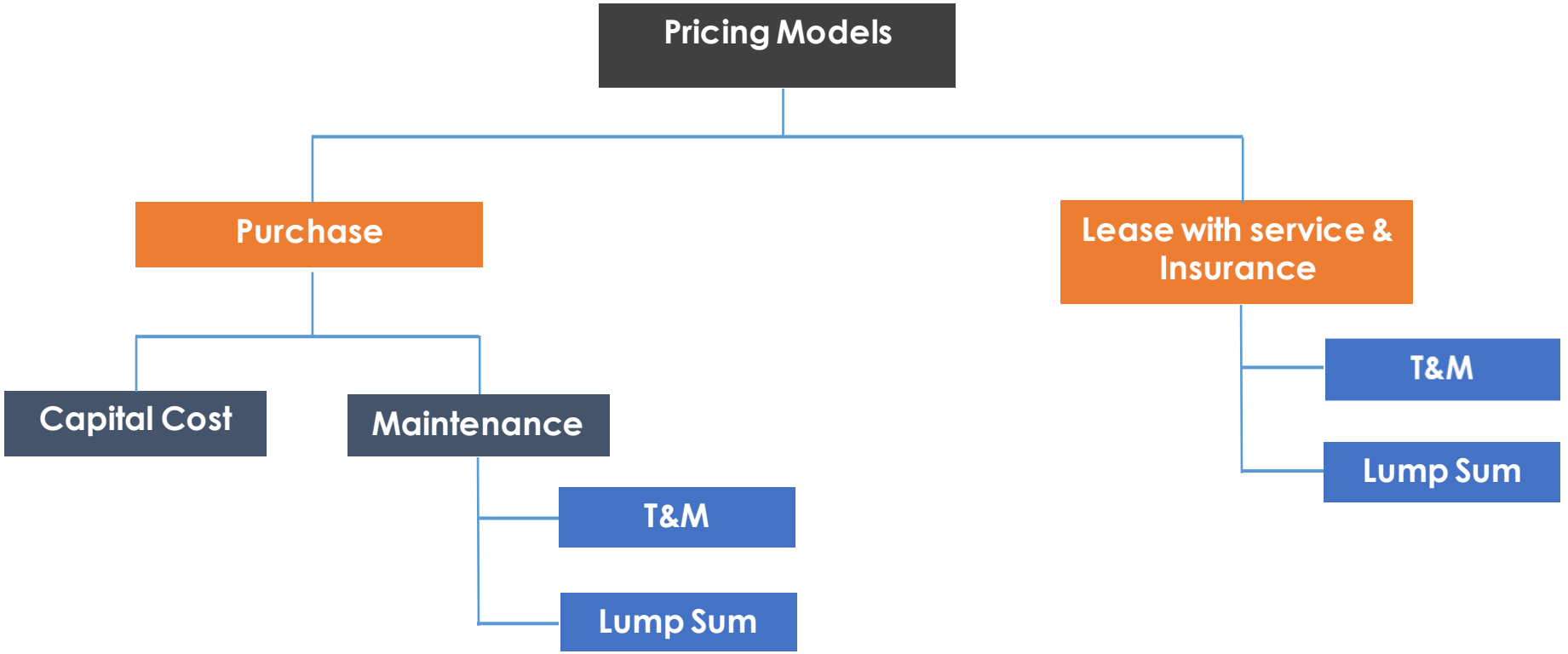
Prevalence of pricing model maintenance varies between purchase and lease

Forklifts : Pricing Models (1/2)



- *For a Purchase Model, Maintenance contract is generally separate with the dealer or a third-party service provider and can be T&M or Lump Sum as per the buyers' preference*
- *For a Lease model, maintenance is generally part of the lease with a Lump sum pricing*

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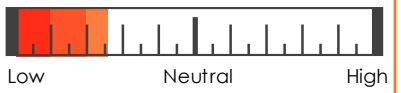
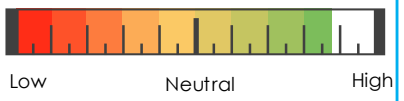
Lumpsum pricing model is primarily adopted for forklift maintenance services

Forklifts :Pricing Models

Times & Material	Definition	Benefits	Drawbacks	Suitability
Adoption Levels 	It includes average hourly rates of maintenance services	• Payment based on time and materials make the billing more transparent	• The model does not incentivize efficiency • Projects can be delayed, and costs may rise if not delayed	• This is generally preferred for reactive maintenance services in addition to planned maintenance

Lump Sum Pricing	Definition	Benefits	Drawbacks	Suitability
Adoption Levels 	It includes a lumpsum amount for defined scope of services	• Minimal risk to the buyer in terms. • Prices are fixed for the entire engagement	• Use of sub-standard spares or materials by service provider.	• Preferable for all lease models and for planned/ scheduled maintenance in a purchase option

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Contracting Best Practices

	Forklifts
Commercial Scope	• Financing details: Purchase / leasing / rentals • List price & discounts for standard equipment models • Lease amount & payment schedules for standard equipment models • Additional pricing for custom attachments and factory fitted options • Maintenance costs: PM program, T&M rates, spare parts, phone support, product warranty • Services costs: Fleet administration, training, documentation, software licenses, programming
Delivery Timeline	• Custom order fleet delivery time: 90 – 150 days
Contract Term	• 3-5 years for leases • 1-2 year for rentals • Equipment purchase terms at end of lease period
Acceptance Testing	• Delivered vehicles are tested and malfunctioning vehicles replaced within a stipulated period from the delivery date
Post-contract Support	Maintenance programs • Type of maintenance: Lump sum/full service vs. basic PM vs T&M programs • Activities included vs. excluded in scope • Maintenance & inspection schedules • Corrective maintenance T&M rates
Training & Documentation	• Operator training hours for new vehicle type • Maintenance service recordkeeping process to be well defined for a full service contract

	Forklifts
Key KPIs	• # of vehicle breakages per year • Vehicle & fleet downtime • On-time completion of PMs • Service call response times and TAT • Fleet optimization recommendations
Payment Terms	• Leasing (a) Monthly lease payments – Net 60 days or Net 30 days @ 1% discount (b) Quarterly Lease payments – Net 90 days or Net 30 days at 2% discount • Rentals – Net 30 days or Net 10 days at 1% discount
Cancellation Terms	• Notice period for cancellation of leases defined • Early termination charges for lease cancellation
Warranty Terms	• Basic warranty: 1 year or 2,000 hours on factory fitted options • Extended warranty: 3 years or 6,000 hours on powertrains • If damaged by incorrect use, buyer penalties and recourse to be defined
Insurance & Risk Terms	• Owned: Commercial insurance policy coverage • Leased: Indemnity based on annual lease charges and based on replacement value vs. current value • Public liability coverage for usage on roads & car parks, vehicle breakdown coverage, lifted goods coverage and own property coverage

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Relocation contracts with multiple suppliers are typically long term, with annual service fee adjustments and fortnightly billing cycle

Forklifts : Key Contractual Benchmarks

Supplier base

Large corporations typically have 1-2 preferred suppliers globally and 2-3 suppliers at a regional level depending on the requirement

Payment Terms

90 to 120 days is the typical range of payment terms for forklift equipment, spared and maintenance services

Duration of Leasing

The minimum period of the lease should be as low as possible (<6 years is preferable)

Contract Length

Forklift rental contracts can vary from few days to few months while lease contracts range from 1-5 years on average

Termination for convenience (Days)

30 days is generally given as period to cure any terms related to non-compliance of contract before termination

Insurance Liability in Leasing

The Lessee shall carry public liability and property damage insurance covering the equipment and its operation and handling for at least ($500,000.00) or other reasonable amount

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Safety, lead time for delivery, maintenance/service offerings and pricing terms are the important parameters for RFP

Forklifts : RFP Considerations

Question 1: Please describe your Quality Control Program to ensure safety

Safety :
Considering the high number of forklift accidents, it is essential that the Forklifts supplier is certified to comply with standard Safety requirements. Buyer should ask the supplier to describe the programs, the types of quality control procedures used, the cost of these programs to customers, and the length of time each program has been in place.

Question 2: Please specify the lead time by when you can deliver the equipment on site

Lead/Response time:
Lead time is crucial in leasing contracts as the production or warehouse operations will be directly impacted by forklift delivery. Response time for corrective maintenance and replacement demand is also a consideration

Question 3: Does your company offer full-service contracts or elaborate the services

Maintenance :
Provision of reactive maintenance services and proactive maintenance by the forklift supplier is beneficial to reduce equipment downtime. Provision of equipment spare parts on the site are considerations

Question 4: Please provide your payment terms

Pricing:
Adherence to client specific or Standard payment terms and different payment term structures should be considered. Additionally understanding suppliers' initiatives for containing costs will be helpful

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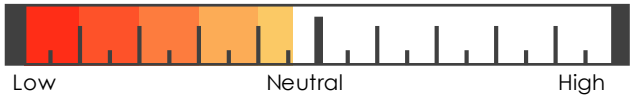
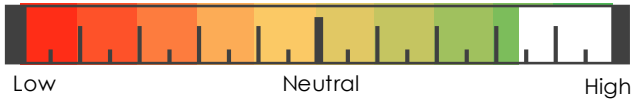
While ~50% of the buyers in US prefer a buying model, globally buyers are preferring leasing model over buying

Forklifts : Sourcing Models

	Buying	Leasing
Adoption Levels		
Definition	• Own the equipment by paying its whole price at the time of purchase	• Buyer agrees to rent the equipment on a monthly rental cost. The equipment is NOT owned by the buyer
Scenario /Fitment	• Low & unpredictable utilization (<1000 hours/year) • No capital & depreciation issue	• High & predictable utilization > 1500 hours/year • Capital constraints • High repair requirements
Benefits	• Purchase is made up front and no subsequent payments in years 3-5. • No concerns for return conditions/clause. You are the owner of the asset • You can depreciate the capital purchase. • No limitations on operating conditions or locations: Easier inter-plant movement.	• Planned replacement cycle ensures constant renewal of fleet which increases productivity & maintains higher safety standards for employees. • Eliminates the often-huge capital outlay to acquire this production tool. • Disposal of the asset. Leasing eliminates the hassle of asset disposals • Maintain the latest technology fleet that adheres to all environmental requirements
Drawbacks	• Tend to keep asset beyond the economic life • Capital expense is very high in the initial fiscal • The customer is responsible to manage the retired asset Resources are spent to manage the fleet. • Large initial cost might lead to purchase of old equipment	• Under-utilization of agreed lease usage hours will increase the operation cost/hour. • Similarly, penalty could be incurred in case of over-utilization. • Abuse charges may be levied at the end of the lease term

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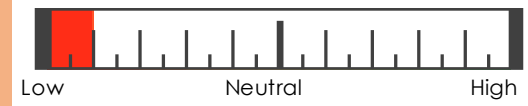
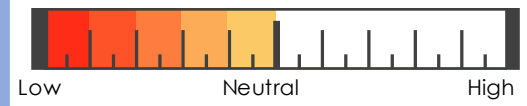
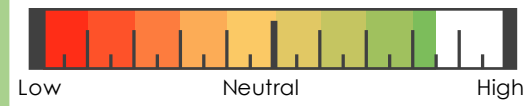
The three type of leasing models are market value based, full payout lease and full-service lease

Forklifts : Leasing Models

	Fair Market Value Lease	Full Payout Lease	Full-service Lease
Adoption Levels			
Definition	A fair market value lease is a forklift lease that has a residual value at the end of the term. (is valuable post depreciation)	Buyer borrows money from the leasing company to pay for the forklift in monthly installments.	Like a rental payment, the full service lease includes the lease payment (which could be an operating lease or a capital lease) plus a portion to pay for its service
Advantages	• The payments are made on monthly basis and hence this model is feasible and affordable for the lessee • Lessee is expected to reimburse for the equipment usage and not the value of the equipment	• Upon completion of the lease term the ownership of the equipment lies with the lessee. • The lease may not show up as a liability in the company's balance sheet	• The forklift dealer/distributor is responsible for the repair, maintenance and up-keep of the equipment • The payment may be fully tax deductible as an operational expense • The lease may not show up as a liability in the company's balance sheet, thereby preserving the critical capital reserves
Disadvantages	• The forklift buyer intending to retain the equipment, once the lease term expires might find it to be an expensive proposition	• The lease rate is often higher than the interest rate charged by the banks for a forklift buyer. A leasing company or financial company borrows money, keep their profit margin and then lends it to the forklift buyer	• The service portion is like an insurance premium and contains the forklift dealers' costs, risk and profit. Paying for service can be a risky proposition if the buyer lacks resources to manage the operating costs

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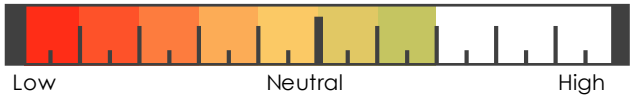
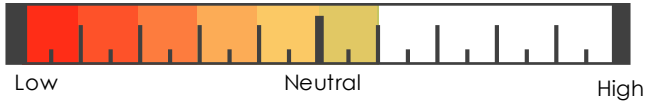
While ~50% of the buyers in US prefer a buying model, globally buyers are preferring leasing model over buying

Forklifts : Leasing Financing Models

	Dealer Sourced Financing	End-User Sourced Financing
Adoption Levels		
Forklift End-user	• The forklift end user shares the requirements with the dealer which includes the kind of forklift trucks required based on their capacity, ergonomics and price. • The end user approves the proposal and passes on the quotations to the financial company to seek leasing and buying plans from their end	• The forklift end user shares the requirements with the dealer • The end user approves the dealer's proposal and supplies credit information to the dealer for the propose of leasing through financial company
Forklift Dealer	• The **dealer act as a liaison between the forklift end user and the financing company** by getting in touch with the financial company on behalf of the customer in order to provide the customer with best in class lease plans and buying rates • The dealer and forklift end user determine the correct equipment required and the dealer will then provide a proposal for **leasing or buying** to the end user	• The dealer and forklift end user determine the correct equipment required for their manufacturing sites and plants. The dealer will then provide a proposal for **purchasing** to the end user
Financing Company	• Once the credit is approved by the forklift end user then **the financial company would then purchase the desired equipment from the dealer** • Post purchase of the equipment the financing company would generate invoice directly to the forklift end user and would initiate a monthly billing cycle for the duration mentioned in the lease plan	• The end user's **recommended financial company would then contact the dealer by issuing a purchase order to the dealer for the equipment required** • Post purchase of the equipment the financing company would generate invoice directly to the forklift end user and would initiate a monthly billing cycle for the duration mentioned in the lease plan

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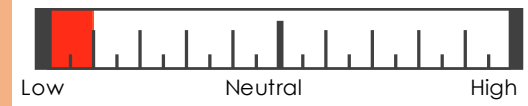
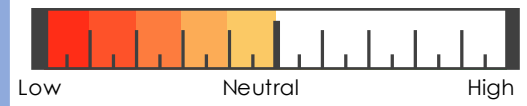
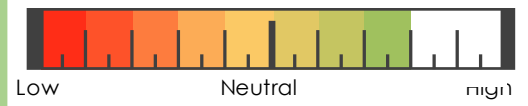
The three type of leasing models are market value based, full payout lease and full-service lease

Forklifts : Forklift Maintenance Models

	In-House	Third Party	OEM
	Adoption Levels 	Adoption Levels 	Adoption Levels 
Suitability	Only recommended when buyer has full-service capabilities in house	In this model multiple suppliers, generally (2-3) provide forklifts with no preference for a single supplier	OEMs have also started providing maintenance services of other brand forklifts
Advantages	• Quality can be monitored closely • Response times to requests are less	• Single vendor for all the maintenance services requirements • Ease of monitoring the service provider and thus maintaining quality control • Parts cost will be lower due to sourcing through a single supplier	• Expertise of the resources will be highest with OEM maintenance • Original spare parts are provided by OEM and thus assurance on quality is maximum
Disadvantages	• High cost of maintenance due to non-core competency • The utilization of such resource is not 100% • Spare parts and other equipment/materials needs to be sourced separately	• Contracting should be extensive and elaborate to get good quality of services • Maintenance labor cost will be higher as compared to that of in-house	• Vendor solutions are tailored to their own specific make • Need to maintain contracts with multiple vendors since the equipment base is sourced from multiple vendors. This will add to the cost

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Different maintenance models can be combined with forklift sourcing models to create overall sourcing strategy

Forklifts : Services by Maintenance Type

The different maintenance models can be combined with the forklift sourcing models to create overall sourcing strategy of forklifts:

- **Complete/ full Maintenance:** The customer is not responsible for the equipment maintenance. This is a straightforward way to develop a TCO model. Customer will pay a fixed monthly payment and the supplier will maintain the equipment fleet as per defined standards
- **Scheduled Maintenance: T**he monthly payment is for the scheduled/ preventive maintenance. All the other (reactive) repairs are based on Time and Material Model (National Account discounts on spare parts and labor costs).

Services Description	Types of Maintenance Models		
	Schedule Maintenance	Full Maintenance	Complete Maintenance
Planned and periodic maintenance	✓	✓	✓
Planned maintenance on battery and charger	✓	✓	✓
Lights and fuses	×	×	✓
Tires and wheels	×	×	✓
Wearable components (Seats etc.)	×	×	✓
Temporary truck provided is truck is out of service for >48 hours?	×	✓	✓
Abuse and misuse repairs costing less than a certain dollar threshold	×	✓ Generally up to $500/ incident	✓ Generally up to $1000/ incident
All breakdown repairs	×	✓	✓
Repair of special attachments (rotators, clamps, etc.)	×	✓	✓

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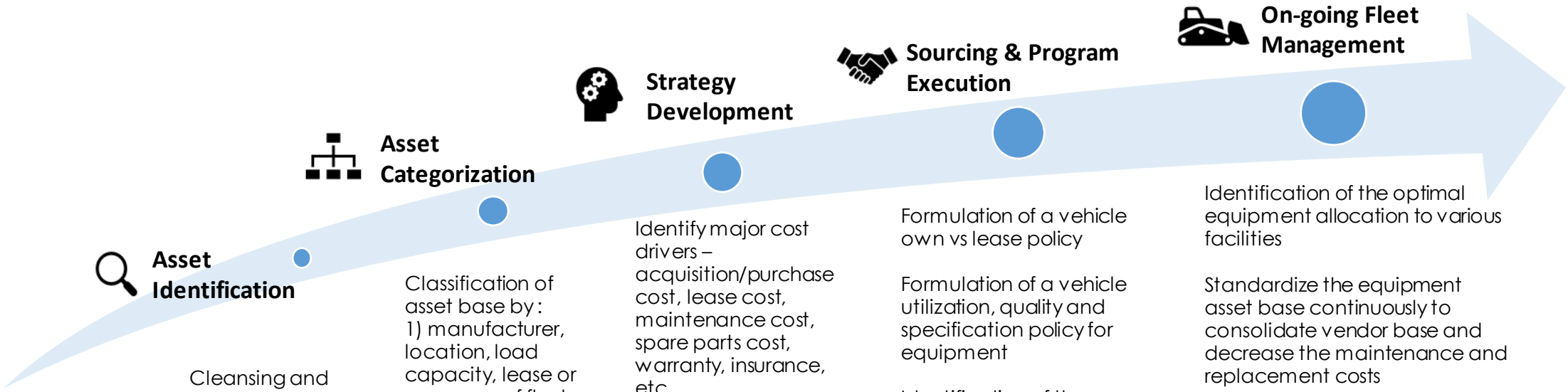
Overall sourcing of forklifts consists of asset categorization, strategy development and fleet management

Forklifts : Equipment Sourcing Program



Asset Identification

Cleansing and normalization of asset base data

Identification of product/equipment mix currently in use and total cost of ownership

Asset Categorization

Classification of asset base by :
1) manufacturer, location, load capacity, lease or own, age of fleet, type of usage, power type, etc.
2) annualized cost of maintenance, depreciation cost, warranty, etc.

Strategy Development

Identify major cost drivers – acquisition/purchase cost, lease cost, maintenance cost, spare parts cost, warranty, insurance, etc.

Major decision options:
- Lease vs acquisition
- Maintenance in house vs third party vs OEM
- Spare parts OEM vs other vendors
- Category of equipment (load, power, type) and manufacturer

Sourcing & Program Execution

Formulation of a vehicle own vs lease policy

Formulation of a vehicle utilization, quality and specification policy for equipment

Identification of the product and service providers

Contracting and terms for acquisition, lease, maintenance services and spare parts sourcing

Consolidation of vendor base by equipment type and location

On-going Fleet Management

Identification of the optimal equipment allocation to various facilities

Standardize the equipment asset base continuously to consolidate vendor base and decrease the maintenance and replacement costs

Fleet management system to monitor and track performance and for optimal utilization

Asset management and improved visibility into asset base, cost of ownership and load utilization.

Managed spend, data for informed decision making and continuous year on year cost improvement

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Forklifts

Buyer Toolkit

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Toyota Industries Corporation (TICO) : Capability Overview

TOYOTA FORKLIFT

Company Snapshot

Industry : Material Handling, Automotive, Textile Equipment

Ownership : Public

Headquarters : Aichi, Japan

Year Established (CWT) : 1926

Number of countries: 100+ Countries
71 subsidiaries outside and 28 within Japan

Website : https://www.toyota-industries.com/

Revenue of CWT (2020) : USD19.73 Bn

Number of Employees (2020): 66,478+

Key Industries Served

- Industrial Manufacturing
- Automotive
- Construction
- Textile
- Logistics & Warehousing

Key Service offered

- Material Handling Equipment: Forklifts & others
- Automotive: develops and manufactures automobiles and automobile-related products, such as vehicles, engines, car air-conditioning compressors, car electronics components and devices, and stamping dies.
- Textile Machinery: Spinning and Weaving Machinery

Key Clientele

GENCO, NSLC BEER • WINE • SPIRITS, Zanders SPORTING GOODS, BYRNE DAIRY Since 1933, unfi united natural foods, ROMARK Trucking

Key Updates

- In May 2021, partnered with Third Wave Automation, to Create Next Generation Autonomous Material Handling Vehicles
- In March 2021, partnered with All Nippon Airways (ANA), one of the Japan's largest and 5-Star airline to perform a test of the newest autonomous tow tractor
- In January 2020, Toyota Material Handling completed the integration process of Toyota Industrial Equipment Manufacturing (TIEM) and Toyota Material Handling USA (TMHU).

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Toyota Industries Corporation (TICO) : Capability Overview

Strength

- **Research and Development Activities:** The company's strong research and development activities help in developing exceptional and competitive products.
- **Market Position: :** TICO is one of the leading manufacturers of materials handling equipment, textile machinery, engines, and electronics devices. The company is the world's largest manufacturer of lift trucks, car air-conditioning compressors, and air-jet loom in terms of unit sales. In the lift truck category, TICO has 21% of the global market share and holds 70% share of electric compressors in the market

Weakness

- **Dependence on Certain Customers:** TICO depends heavily on a certain customers for a significant portion of their sales, which makes it vulnerable to associated market risks and concentrated revenue channels. The company's automobile and engine products are sold mainly to Toyota Motor Corporation (TMC)
- **Performance of Materials Handling Equipment Business Segment:** Decline in Materials Handling Equipment Business segment may affect the company's financial performance and growth prospects.

TOYOTA FORKLIFT

Impact Analysis

Fuel Cell Technology Lift Trucks

Response

- Toyota Material Handling Division is the leading adopters of Fuel Cell Technology for lift trucks
- The technology is expected to pickup first in the mature markets in Japan, US& Europe

Vehicle based VR training

Response

- Raymond has introduced virtual reality (VR) training, which allows operators to use a Raymond forklift truck in a simulation mode for training using preprogrammed exercises.

Automation of Forklifts

Response

- In April 2020, Toyota Material Handling introduced 4-wheel electric lift trucks, with 3,000 and 3,500-pound capacity models designed to boost both productivity and uptime.

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KION Group : Capability Overview

Company Snapshot

Industry : Material Handling, Automotive, Textile Equipment

Ownership : Public

Headquarters : Germany

Year Established (CWT) : 2006

Number of countries: Present in nearly 100+ countries

Website : http://www.kiongroup.com/

Revenue of CWT (2020) : USD 6.98 Bn

Number of Employees (2020): 36,000+

Key Industries Served

- Industrial Manufacturing
- Food
- Pharmaceutical
- Automotive

Key Service offered

- Forklift trucks, warehouse equipment, and industrial trucks
- Kion operates across the four segments of Linde Material Handling (59%) STILL (forklift trucks and warehouse trucks; 32%), Financial Services (8%), and Other (1%).

Key Clientele

3M, Mylan, ABB, BMW, BASF (We create chemistry), Opel

Key Updates

- In 2020, expanded its production facility in Stříbro, Czech Republic, which will be used to manufacture conveyor belts, pouch sorting systems, and storage and retrieval equipment
- In 2020, partnered with Quicktron, a Chinese manufacturer of autonomous mobile robots (AMR), to offer customers an extensive product range in the automated truck section
- Kion Group is expected to acquire a minor stake in Chinese peer EP Equipment as part of a strategic partnership between the two companies. The two companies plan to jointly develop products and leverage synergies along the supply chain, boosting the competitiveness of their product ranges

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KION Group : Capability Overview

Strength

- **Strong Market Position for Forklifts Business**
  - Global No. 1
  - Europe No. 2
- Global 3: in in supply chain solutions
- **Strong Global presence:** Around 1,500 sales and/or service locations. Global presence in more than 100 countries and a ~ 36,000 highly skilled employee force

Weakness

- Weakness in Western European markets, the major market for Kion poses a revenue risk to the group. This is partly offset by the increase in demand from Eastern Europe
- Fitch Ratings: BBB- (Stable)

KION GROUP

Impact Analysis

Lithium-ion batteries

Response

- Started production of lithium-ion batteries for industrial trucks
- Key objective include: To meet the demand for lithium-ion battery systems in the intralogistics market

Intelligent Trucks

Response

- Trucks equipped with electronic control unit
- Increased efficiency also from driver assistance systems

Automated Trucks

Response

- Full range of automated series trucks
- Enable automation of the entire material flow

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Logisnext (Mitsubishi Logisnext Co. Ltd) : Capability Overview

Company Snapshot

Industry : Industrial Trucks & Equipment

Ownership : Private Subsidiary
Parent: Mitsubishi Logisnext Co., Ltd

Headquarters : Japan

Year Established (CWT) : 1937

Number of countries: Americas (6), Europe (7), China (6), Asia (6)

Website : https://www.logisnext.com/en/

Revenue of CWT (2020) (Group) : USD 1.67 Bn

Number of Employees (2020): 11,000+

Key Industries Served

- Manufacturing
- Warehousing & Distribution
- Pharmacy
- Logistics
- F&B

Key Service offered

- Development, design, manufacture and sales of electric and engine-powered forklifts, transportation robots, automated warehouses, LAN and other logistics equipment and systems, electric vehicles, and monorails.

Key Clientele

Johnson Controls, boughey, BRITVIC plc, mac

Key Updates

- In February 2020, Mitsubishi Logisnext Europe accelerated the optimisation of its material handling and logistics solution offerings through further group integration in Europe.
- In April 2019, Mitsubishi Logisnext Americas Inc. announced the plans to acquire all of the outstanding equity interests of Pon Material Handling, NA, Inc.

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Logisnext (Mitsubishi Logisnext Co. Ltd) : Capability Overview

Strength

- **Wide Portfolio offerings:** Brands include CAT, Rocla, Mitsubushi, Unicarriers, and TCM
- **Prime Focus on Innovation:** The main motto of the merged entity is to drive innovation in the next generation of forklifts and overall logistic equipment and logistics systems
- **Strong industry positioning:** The merged entity Logisnext stands globally at no. 3

Weakness

- **Nascent Post Merger Stage:** Logisnext is still in the initial post-merger stage and requires few years mostly around 2020 when it will start realizing the actual benefits of the merger
- **Overreliance on Japanese market for business:** Majority of sales of Logisnext is from Japanese market

Logisnext
MITSUBISHI LOGISNEXT CO., LTD.

Impact Analysis

Automation technology AGV &AGF	Increase in Safety-Good Viewer	Adoption of IoT, AI
Response	**Response**	**Response**
• Major initiatives of Logisnext include Laser guided AGF (Auto Guided Forklift) • This type of demand is expected pickup with warehouse automation	• Through the launch of "Good Viewer", a perimeter monitoring system (360 degree view for the driver of a forklift), Logisnext plans to improve Forklift Safety	• Logisnext aims to advance its IT technologies such as AI, IoT, etc.

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Jungheinrich AG : Capability Overview

Company Snapshot

Industry : Material Handling

Ownership : Independent

Headquarters : Germany

Year Established (CWT) :1953

Number of countries: 40 countries

Website : http://www.jungheinrich.com/en/

Revenue of CWT (2020) : *USD 3.19 Bn*

Number of Employees (2020): 18,000+

Key Industries Served

- Retail & Wholesale
- Food & Beverage
- Logistics
- Mechanical, Industrial, Automotive,
- Textile, Paper
- Chemical

Key Service offered

- New Trucks
- Short Term Hire
- Logistics systems
- Used Equipment
- Digital Solutions
- Mail Order Business
- Consulting
- Financial Services
- After Sales Service

Key Clientele

Sainsbury's, Carlsberg, BOSCH Invented for life, HACHEZ Manufaktur-Chocolade seit 1890

Key Updates

- In 2021, the company's new electric pallet truck ERD 220i was distinguished as "Best of the Best" and was awarded with the Red Dot Design Award.
- In 2020, Dahlhausen Medizintechnik GmbH commissioned Jungheinrich to automate its pallet transport between the new incoming goods area and the existing logistics area at its location in Halberstadt.
- In 2020, Hagebau Logistik's has commissioned Jungheinrich to replace the current fleet of the material handling equipment by various brands used to date by some 200 Jungheinrich trucks.

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Jungheinrich AG : Capability Overview

Strength

- **Awards and recognition:** The company received 8 awards for product innovation
- **Strong Market Position** -Forklifts
  - ✓ Global Rank No. 4
  - ✓ Europe Rank No. 2
- **Strong R&D:** With 458 people in R&D, Jungheinrich has developed 21 product innovations and spent EUR62M on R&D and was successfully granted 88 patents out of 117 files

Weakness

- **Overdependence on Western Europe:** Jungheinrich generates a 49% of its revenue from the Western Europe
- An overdependence on one region for revenue could be a concern for Jungheinrich in the event of any political or economic adversity.

JUNGHEINRICH

Impact Analysis

Li-Ion Technology	Driverless Forklifts	Intralogistics 4.0
Response	**Response**	**Response**
• Jungheinrich AG is one of the pioneers of Li-Ion powering technology for forklifts	• Automated Guided Forklifts using laser for enabling navigation are the innovations that Jungheinrich AG is driving	• Jungheinrich has launched an array of integrated solutions and intelligent assistance systems for forklifts

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Crown Equipment Corp : Capability Overview

Company Snapshot

Industry : Forklifts & Industrial Trucks

Ownership : Private

Headquarters : Ohio, US

Year Established (CWT) : 1960

Number of countries : 84

Website : http://www.crown.com/en-us.html

Revenue of CWT (2020) : USD 3.7 Bn

Number of Employees (2020) : 16,000+

Key Industries Served

- Industrial, Automotive,
- Retail & Warehousing
- Textile

Key Service offered

- Forklifts
- Automation Solutions
- Fleet Management
- Financing options
- Warehouse Solutions

Key Clientele

Key Updates

- In 2020, the company launched their upgraded Crown C-G Series of internal combustion (IC) cushion tire LPG counterbalance forklifts, with capacity ranging from 8,000 to 12,000 pounds
- The company earned the 2020 Green Supply Chain Award for its commitment towards environmental sustainability
- In 2020, the company introduced a new e-commerce site for its U.S. customers, which allows them to purchase its products and thousands of forklift parts and supplies at any time from any device

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Crown Equipment Corp : Capability Overview

Strength

- **Strong industry credibility with innovative customers:**
  - 60% of Forbes Top 50 Innovative Companies
  - 88% of Fortune 500 Companies
- **Strong Manufacturing base:** It designs and manufactures 85% of its lift truck components including key parts like motors, drive units, and electronic modules

Weakness

- **Limited presence in Asia, one of the major markets for forklifts:** Crown has branch sales and service center operations in Australia, Belgium, Germany, Korea, Malaysia, Netherlands, New Zealand, Singapore, Spain, the UK, and more than 50 locations in the US.

crown lift trucks

Impact Analysis

Sustainability	Safety and delivery	New technology
Response	**Response**	**Response**
• Food Logistics Recognizes Sustainability Efforts of Crown Equipment as Top Green Provider	• Crown Equipment Helps Northgate Markets, a super chain market in California to Achieve Lowest Injury Rate in 11 Years	• In March 2020, Crown Equipment Corporation introduced a new line of small footprint **LPG lift trucks** –with capacity of 3,000-4,000 lb. – designed for easy maneuvering in manufacturing, warehouse and beverage operations with limited space

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Hyster-Yale Material Handling Group : Capability Overview

Company Snapshot

Industry : Industrial Trucks and tractors

Ownership : Public

Headquarters : Ohio, US

Year Established (CWT) :1940

Number of countries: Manufacturing presence in 25 countries

Website : http://www.hyster-yale.com/

Revenue of CWT (2020) : USD 2.8 Bn

Number of Employees (2020): 7,600+

Key Industries Served

- Manufacturing
- F&B
- Retail
- Freight & Logistics
- Paper

Key Service offered

- Electric and ICE lift trucks
- Comprehensive global proprietary and "all-makes" service parts program

Key Clientele

Key Updates

- In 2021, the company offered safety-related resources for National Forklift Safety Day
- In 2021, the company introduced its new E50-60XNL series, the industry's first cushion tire counterbalanced lift truck
- In 2020, the company joined forces with Capacity Trucks, to co-develop electric and hydrogen-powered terminal tractors with automation-ready capabilities

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Hyster-Yale Material Handling Group : Capability Overview

Strength

- Hyster® and Yale® are among the most recognized brands in the lift truck industry.
  - Leading market share positions in the Americas and worldwide
  - In business for more than 80 years
- Overall:
  - Leading market share positions with large, installed population base
  - Comprehensive, updated global product line
  - Globally integrated operations with economies of scale

Weakness

- **Overdependence of sales on America markets :** ~70% of total sales of Hyster Yale comes from America region
- The company plans to introduce automation and telemetry capabilities for its lift trucks offerings may impact sales slightly with operational efficiency gains of customers

HYSTER-YALE MATERIALS HANDLING

Impact Analysis

Robotic Lift Trucks

Response

- Robotic lift trucks offered by Hyster Yale include types: End rider, Tow Tractor, and counterbalanced stacker
- Such robotic lift trucks enable operating efficiency, reduce operational costs by up to 70%

Alternative Power Forklifts

Response

- With increasing environmental regulations and fluctuating energy costs, alternative power for electric forklifts is imperative
- Hyster Yale offers Lithium-Ion batteries and Hydrogen Fuel Cells as alternative power solutions

Cross industry Acquisitions

Response

- Through recent acquisitions, Hyster Yale has strengthened its Forklifts portfolio and added additional capabilities in logistics telematics

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Forklifts being a technologically advanced equipment sees innovation driving better ergonomics

Forklifts : Emerging Innovators

Supplier Name	Supplier Name	Supplier Name	Supplier Name	Supplier Name
CAVAION SIDELOADERS BAUMANN	COMBiLIFT	crown lift trucks	Linde Material Handling	MAXTRUCK
1	**2**		**4**	**5**
• The new Baumann GX Side loader Series utilizes a direct drive Archimedes screw and sliding blocks to extend the fork carriage, whilst preventing transverse movements and eliminating unnecessary stresses. • This patented enhanced equipment	• Combilift's patented Straddle Forklift is a revolutionary machine designed to handle a full 25t truck-load of product in one lift; smaller and larger capacities are also available	• Crown has extended its tried-and tested QuickPick Remote Lift Technology with a new variant that controls lift and lower functions • The new lift technology means operators can now raise and lower the truck's forks without having to use its control handle.	• Linde Material Handling presents a new intelligent operator-assist system for reach trucks - the Linde Dynamic Mast Control (DMC). The system automatically compensates for mast oscillations and deflection through precise and seamless counter-movements of the reach carriage.	• MaxTruck 2T is a unique 2 ton omni-directional forklift equipped with the patented MaxWheel. The ability to drive in all directions ensures more efficient operation in tight working areas and more efficient and secure handling of large or long loads.

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Diverse players in the traditional MHE supplier landscape include automobile and drive technology providers entering the forklifts market

Forklifts : Top Diverse Partners

Supplier Name	Supplier Name	Supplier Name
		ZF-Heli JV
1	**2**	**3**
• Chery is an automobile major which is also a leading forklifts manufacturer in Asia	• BYD Co Ltd is a Chinese manufacturer of automobiles, buses, forklifts, rechargeable batteries, trucks, etc.	• China's top forklift manufacturer, Anhui Heli Co. Ltd and ZF Friedrichshafen AG, a provider of driveline and chassis technologies for the passenger car and commercial vehicle industries worldwide announced a merger

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Forklifts

Category Commandments

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GEP Recommendations To Source Better

Forklifts : Recommendations

Key Question: Key Question: Should forklifts be purchased or leased?

Observation	Recommendation
• In US 50% of the buyers purchase forklifts, 43% lease forklifts and 7% of the buyers adopt a hybrid approach • Globally, increasing number of buyers are preferring lease model for sourcing forklifts	• Leasing model is recommended for high predictable utilization and when repairs are high • Purchase model is recommended for low predictable utilization and for long term, large scale requirement

Key Question: Should buyers engage with OEMS or distributors?

Observation	Recommendation
• Generally, in practice buyers buy forklifts from authorized dealers of top OEMs • Sourcing on smaller scale happens with regional or local distributors	• It is recommended to buy forklifts from Authorized dealers if considering top global OEMS • These dealers provide timely spare delivery and also additional services

Key Question: Should buyers prefer global major OEMS or regional manufacturers?

Observation	Recommendation
• Market for forklifts is highly consolidated with top 5 suppliers accounting for more than ~60% of market share • Mature buyers globally prefer top global OEMs	• It is recommended to source forklifts of top global brands. These suppliers offer top quality, standards, safety assurance and offer latest technology

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GEP Recommendations To Source Better

Forklifts : Recommendations

Key Question: Which is the most preferred supplier engagement model?

Observation	Recommendation
• In US 50% of the buyers purchase forklifts, 43% lease forklifts and 7% of the buyers adopt a hybrid approach • Globally, increasing number of buyers are preferring lease model for sourcing forklifts	• For large scale corporations, it a Preferred Supplier engagement at a global level is recommended • Full-service agreement with preferred supplier in addition to spares provides significant leverage to buyers

Key Question: Key Question: Which are the pricing models for maintenance services?

Observation	Recommendation
• In most forklift lease, a lump sum pricing model is implemented for maintenance service • For purchase model, in cases where buyer looks after services, a T&M model is adopted	• Generally, a lump-sum contract is preferred for services as that ensures least risk to the buyer and also ensures best in class service offering

Key Question: Which negotiation levers can be employed during price negotiations?

Observation	Recommendation
• Volume consolidation, TCO based approach, Spend based discounts and Incumbent discounts are negotiation levers adopted	• TCO based approach, spend based discounts and evaluation of use of refurbished fleet can provide significant cost saving opportunities • Sign on bonus can be negotiated while switching to a new supplier

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