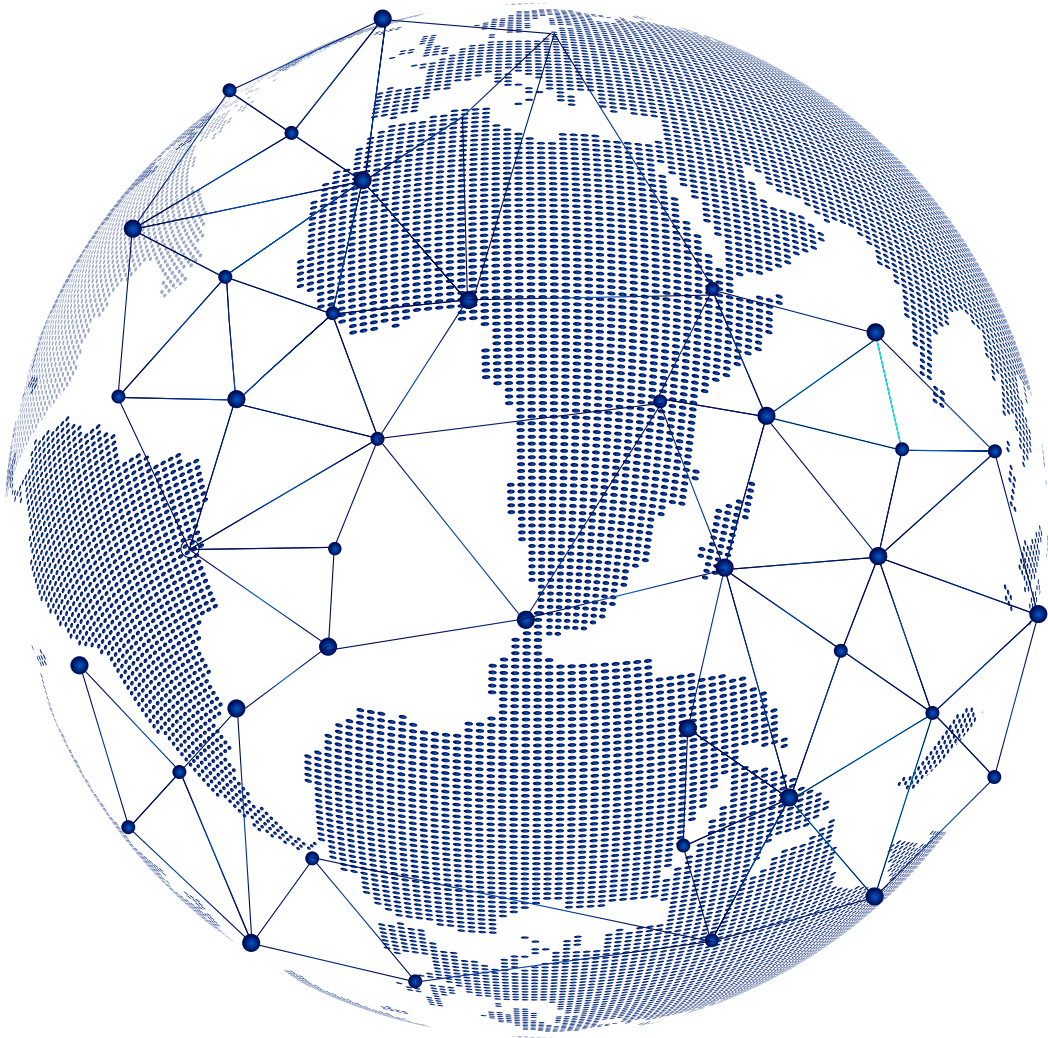




شركة وادي الرياض
Riyadh Valley Co

Logistics Sector: Leveraging Emerging Technologies



November 2023

Growth by Innovation

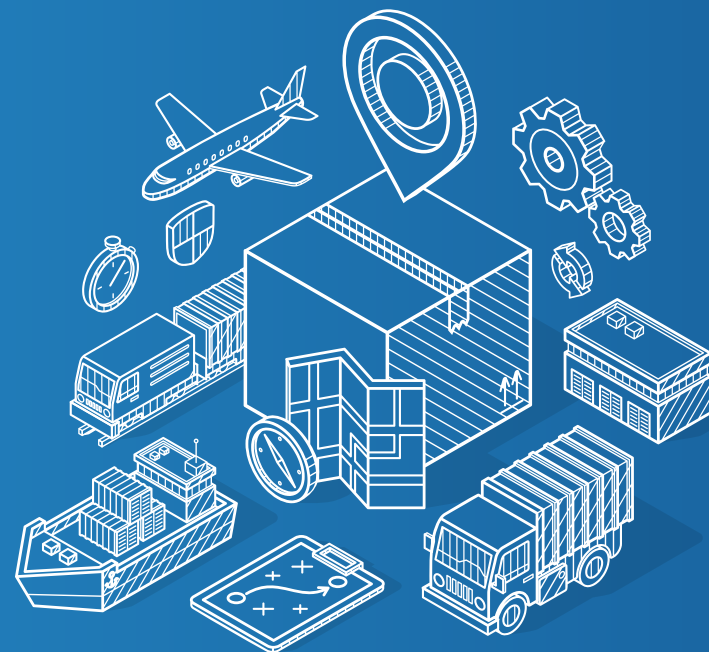
Riyadh Valley Co. A Quality Shift towards the Future



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Introduction

The logistics sector plays a vital role in global trade and commerce, facilitating the movement of goods across vast distances in our interconnected world. Recent years have witnessed a remarkable transformation in this industry due to emerging technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), Blockchain, and automation, presenting both opportunities and challenges. Traditionally known for complexity and inefficiencies, the logistics sector is on the brink of a technological renaissance.



One of the pivotal aspects of this transformation is the role of real-time data analytics and predictive maintenance. These tools are enabling logistics companies to make informed decisions, optimize routes, reduce fuel consumption, and enhance operational efficiency. Another groundbreaking development that is already making an impact is the utilization of autonomous vehicles and drones. Autonomous trucks and drones are poised to revolutionize last-mile deliveries, making them faster and more efficient. Blockchain technology offers the potential to revolutionize supply chain management by increasing transparency, traceability, and security. Every step of a product's journey can be recorded on an immutable blockchain ledger, making it less likely for errors to occur.

As we delve deeper into the impact of these innovations, it's essential to consider the multifaceted effects on various stakeholders. Businesses stand to gain significantly from these advancements in terms of cost savings, improved delivery speed, and accuracy. Consumers, on the other hand, benefit from a more seamless and transparent experience. They can track their packages in real-time and trust the legitimacy of the products they purchase.

Overview of Emerging Technologies in Logistics Sector

Technological progress and innovations are causing significant changes in various industries, with the logistics sector experiencing notable impacts. Emerging trends in logistics are driven by technology-driven innovations. The following exhibit summarizes some key technology trends to keep an eye on in the logistics industry, shaping a promising future for the sector.



Key Technology Trends in Logistics

Smart Logistics



Artificial intelligence and machine learning are improving supply chain operations, making logistics more efficient and customer-friendly. This includes predictive route optimization and anticipatory shipping.

Connected Networks



The integration of technologies like IoT and 5G is enhancing visibility and efficiency in logistics. This results in more demand-driven and market-responsive supply chains.

Responsible Logistics



Achieving transparency throughout the supply chain is possible through the integration of smart logistics and blockchain technology.

Autonomous Transport

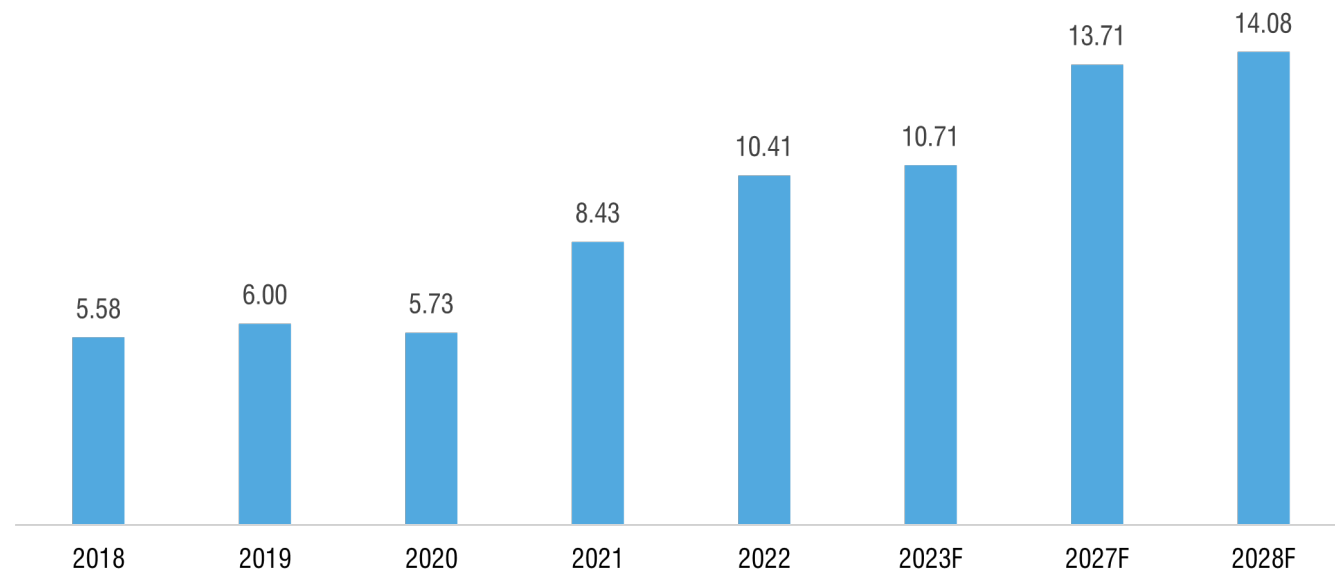


Autonomous vehicles and drones are set to revolutionize transportation, making it more cost-effective and freeing up time for other activities.

Global Logistics Market

According to Statista, the size of Global Logistics Industry is expected to reach USD 14.1 trillion in 2028 from USD 10.4 trillion in 2022, with a compounded annual growth rate (CAGR) of 5.2%. A significant driver of this growth is the surging e-commerce sector, which has led to an increased demand for logistics services to efficiently manage supply chains and ensure timely product deliveries. Moreover, the rise in reverse logistics activities and the expansion of trade-related agreements have further contributed to the flourishing logistics market.

Size of Global Logistics Industry (Market Size in USD trillion)



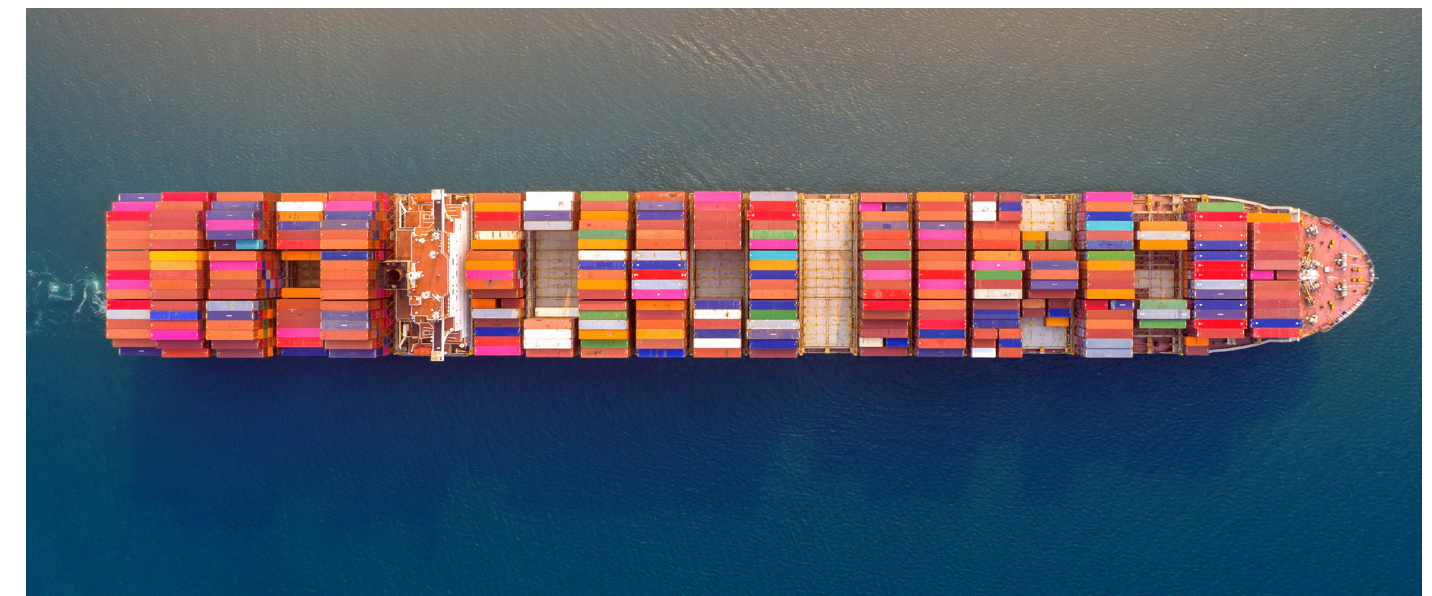
Source: Statista

Top 10 players of the logistics sector in the world, in terms of market capitalization

| Sno. | Company Name | Country of Incorporation | Market Cap (FY 2022, USD bn) | Revenue (FY 2022, USD bn) |
|------|---------------------------|--------------------------|------------------------------|---------------------------|
| 1 | United Parcel Service Inc | United States | 150 | 100 |
| 2 | FedEx Corp | United States | 62 | 90 |

| | | | | |
|----|--|------------------|----|-----|
| 3 | Deutsche Post AG | Germany | 59 | 101 |
| 4 | DSV A/S | Denmark | 44 | 34 |
| 5 | S.F. Holding Co Ltd | China (Mainland) | 32 | 39 |
| 6 | ZTO Express (Cayman) Inc | Cayman Islands | 21 | 5 |
| 7 | Expeditors International of Washington Inc | United States | 18 | 17 |
| 8 | CH Robinson Worldwide Inc | United States | 11 | 25 |
| 9 | Compagnie De l'odet SE | France | 11 | 22 |
| 10 | JD Logistics Inc | Cayman Islands | 11 | 20 |

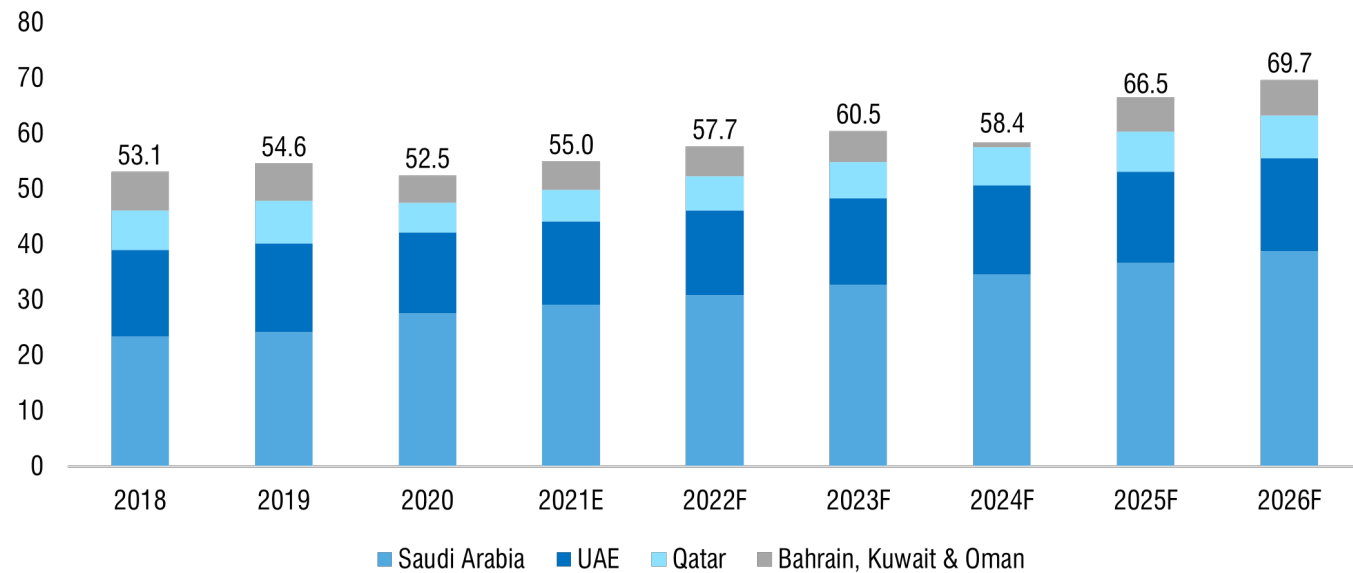
Source: Refinitiv



GCC Logistics Market

The GCC's logistics infrastructure growth is driven by its strategic location on the Asia-Europe trade route, resulting in substantial investments in transport infrastructure across GCC states, including ports, airports, railways, and roads. Given their strategic location, GCC countries' logistics industry is poised for growth. In particular, the transport sector in GCC is set to grow at a CAGR of 4.9% from 2021-2026.

Size of GCC Logistics Industry (Market Size in USD billion)



Source: YCP Solidiance

Top players in the logistics sector in the GCC region, in terms of market capitalization

| Sno. | Company Name | Country of Incorporation | Market Cap (FY 2022, USD bn) | Revenue (FY 2022, USD bn) |
|------|------------------------------------|--------------------------|------------------------------|---------------------------|
| 1 | Agility Public Warehousing Company | Kuwait | 5.4 | 2.8 |
| 2 | Aramex | UAE | 1.1 | 1.6 |
| 3 | Abu Dhabi Aviation | UAE | 0.8 | 0.6 |
| 4 | Gulf Warehousing Company | Qatar | 0.5 | 0.4 |

Source: Refinitiv

Key Growth Drivers of GCC Logistics

Strategic Location

The GCC countries are reaping the benefits of their strategic location, positioned between Europe and Asia, which has made them vital hubs for international trade.

Infrastructure

- The region is engaged in implementing initiatives to enhance its logistics infrastructure.
- This includes the development of ports, airports, and rail networks, along with investments in advanced technology and automation, to streamline and improve the efficiency of logistics operations.

National Strategies

- In order to attract companies and encourage business operations, the GCC has successfully adopted many strategies, such as establishment of free zones and the provision of tax incentives.

Source: Grant Thornton

GCC Countries Logistics Performance Index and Sub-Indicators

| Logistic Performance Index (LPI) 2023 | KSA | UAE | Kuwait | Qatar | Oman | Bahrain |
|--|-----|-----|--------|-------|------|---------|
| LPI Score | 3.4 | 4.0 | 3.2 | 3.5 | 3.3 | 3.5 |
| Customs Score | 3.0 | 3.7 | 3.2 | 3.1 | 3.0 | 3.3 |
| Infrastructure Score | 3.6 | 4.1 | 3.6 | 3.8 | 3.2 | 3.6 |
| International Shipments Score | 3.3 | 3.8 | 3.2 | 3.1 | 3.4 | 3.1 |
| Logistics Competence and Quality Score | 3.3 | 4.0 | 2.9 | 3.9 | 3.2 | 3.3 |
| Timeliness Score | 3.6 | 4.2 | 2.8 | 3.5 | 3.1 | 4.1 |
| Tracking and Tracing Score | 3.5 | 4.1 | 3.3 | 3.6 | 3.9 | 3.4 |

Note: Color scale comparison for GCC countries - Lowest Score (Red) to Highest Score (Green). Average Score is indicated by a triangle.

Source: World Bank

Artificial Intelligence in Logistics

Artificial intelligence (AI) stands out as a game-changing force, revolutionizing supply chain management. AI efficiently processes data, makes intelligent decisions, and predicts outcomes, making it an essential tool in logistics.

Benefits of AI in Logistics



Computer Vision

- AI-based computer vision for package sorting and categorization
- Integration of cameras and computers
- Segregation and labeling of inventories based on dimensions and weight



Predictive Analysis

- Optimize inventory and operations through historical data analysis
- AI-driven data analysis at multiple levels and intervals
- Less than 1% error rate, better utilization of human labor



Autonomous Vehicles

- AI-driven systems for faster and safer deliveries
- Identification of optimal routes for minimal delivery time
- Reduced package damage with intelligent data analysis



Big Data

- Effective handling of large volumes of data with AI
- Preparation for challenges like adverse weather through big data analytics

Source: Appinventiv

Blockchain in Supply Chain: Ensuring Transparency, Security, and Efficiency

The growing logistics industry is turning to blockchain technology to streamline supply chain processes. Blockchain has addressed issues such as inefficiencies, cyber-attacks, and food spoilage, thanks to its decentralized and distributed ledger systems. These ledgers reduce errors and bottlenecks, while also providing valuable data for tracking shipping container movements, optimizing routes, and reducing wasted time.

Key Players and Use Cases of Blockchain in Logistics

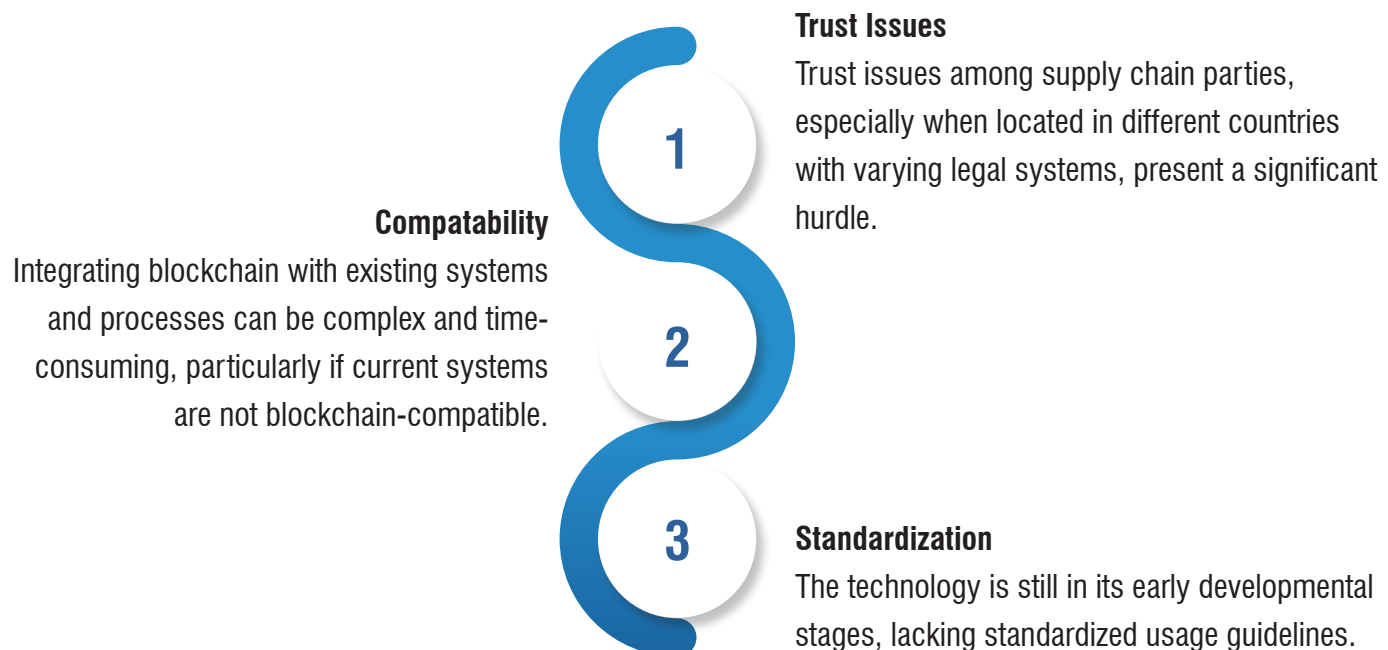
| Name of the Company | Application of Blockchain in Logistics |
|---------------------|--|
| Accenture | Combines blockchain and AI for real-time insights and automation in logistics. |
| Slync.io | Combines blockchain, AI, and IoT devices for traceability and transactions. |
| Chronicled | Combines blockchain, AI, and IoT devices for traceability and transactions. |
| Koopman Logistics | Uses blockchain to reduce paperwork, quicken payments, and enhance security. |
| Microsoft | Azure's blockchain tracks items along supply chains and facilitates compliance. |
| Oracle | Offers Intelligent Track and Trace for comprehensive logistics process tracking. |
| CargoLedger | Focuses on reducing physical and time waste with personalized blockchain technologies. |
| IBM | Equips supply chain networks with blockchain for secure data and smart contracts. |
| MuleChain | A decentralized P2P personal delivery network using blockchain-based smart contracts. |
| DexFreight | Features a blockchain-backed P2P marketplace for shipping and hauling. |

| | |
|---|--|
| Blockchain in Transport Alliance (BiTA) | Creates common standards and practices for implementing ledger technology in shipping. |
| Sweetbridge | Uses blockchain for liquidity and flexibility in the supply chain. |
| OpenPort | Modernizes cash flow issues in the logistics process with blockchain and digital ePOD. |
| 300cubits | Provides cryptocurrency tokens to ensure trust in product shipping. |
| Guardtime | Uses blockchain for maritime logistics to enhance trust and transparency. |
| Skuchain | Provides ledger technologies, including track-and-trace and collaboration tools. |
| SyncFab | Focuses on manufacturing supply chain with real-time quotes and smart contracts. |
| SkyCell | Specializes in pharmaceutical logistics with temperature barriers and security. |
| Provenance | Uses blockchain for transparency in the retail industry and supply chain accountability. |

Source: Built In

Implementing blockchain in logistics faces several challenges. Overcoming these challenges requires careful planning, collaboration among stakeholders, and a clear understanding of the specific use cases. The following exhibit summarizes three key blockchain implementation challenges widely faced in the logistics industry.

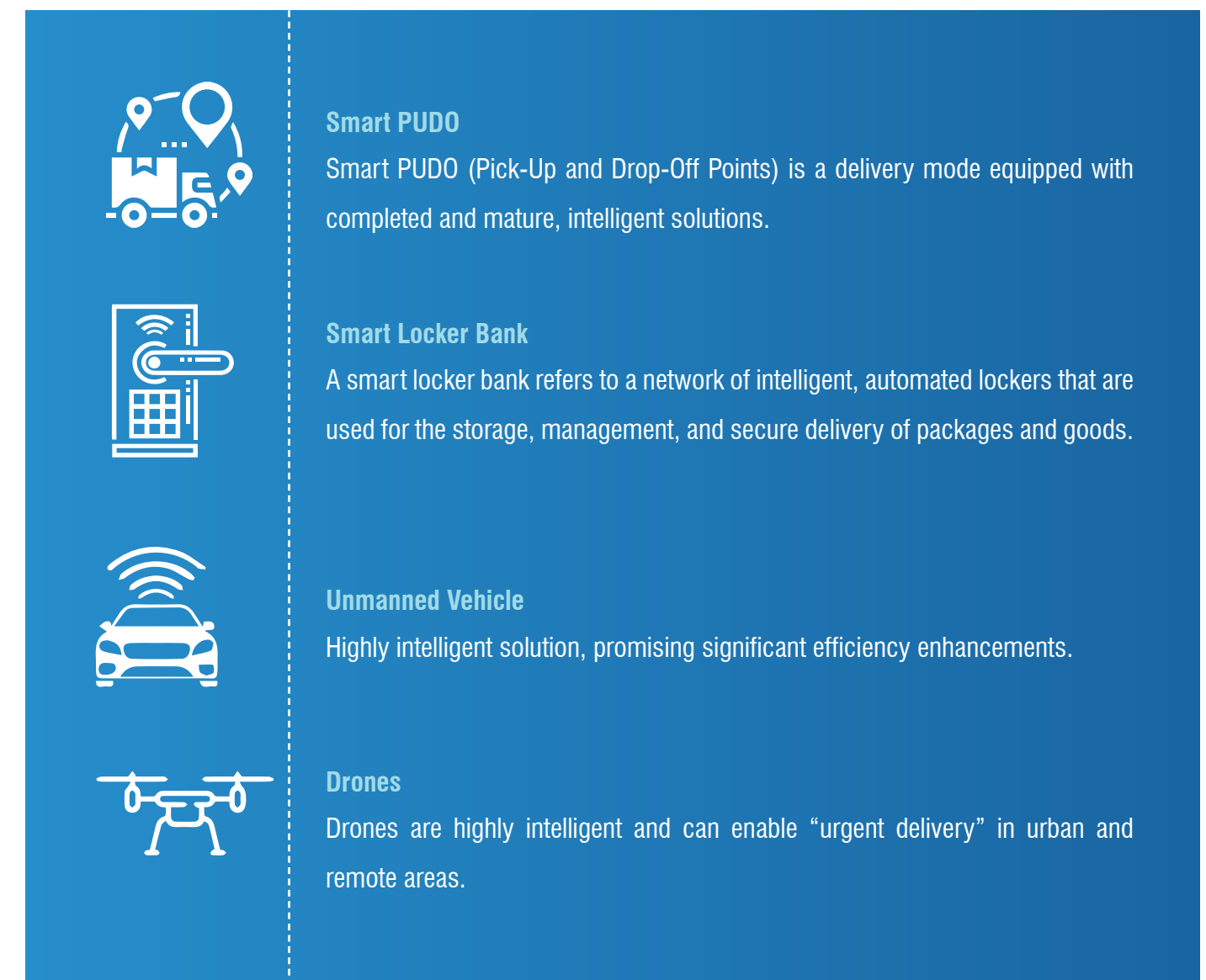
Implementation challenges of Blockchain in Logistics



Smart Last-Mile Delivery Revolution

In recent years, there has been a noticeable transformation in the world of last-mile logistics, characterized by the emergence of smart PUDOs (Pick-Up and Drop-off Points), locker banks, unmanned vehicles, and drones. This model has been adopted on a global scale in recent years by many e-commerce and logistics companies to enhance customer satisfaction. Smart PUDOs and locker banks have become popular last-mile delivery options, effectively reducing costs, and providing customers with 24/7 pickup opportunities.

Last-mile Logistics delivery related smart solution












Source: Deloitte

Case Studies - Technology Transformation in Logistics Sector

Transportation and logistics is exploring futuristic concepts such as Hyperloop, space elevators, underground tubes, teleportation, and drone swarms.

Global Startups and Innovative Technologies in Logistics

| Company | Technology | Description |
|--|------------------------------|--|
|  Deep Blue Globe | Real-time Satellite Data, AI | Develops AI solutions for shipping and maritime industry using real-time satellite data. |
|  Flexe | On-demand Warehousing | Enables on-demand and flexible warehousing. |
|  CONVOY | Digital Freight Network | Optimizes freight truck loads through a connected network of carriers. |
|  shypple | Digital Freight Booking | Provides a digital dashboard for companies to search and book freight shipping. |
|  SHIPCHAIN | Blockchain in Supply Chain | Uses Ethereum blockchain technology to create a fully integrated supply chain system. |
|  VELOMETRO | Pedal-Electric Vehicle | Develops the Veemo, a pedal-electric vehicle for transportation. |
|  Skycart | Autonomous Drone Delivery | Network of autonomous drones for instant delivery. |
|  mobotiq.me | Modular Personal Mobility | Peer-to-peer mobility with autonomous pods and eliminating intermediaries. |
|  JETPACK AVIATION | Flying Motorcycle | Specializes in recreational jet packs and develops models of flying motorcycles for potential military and commercial use. |

Source: Cognizant

Innovations in GCC Logistics

The GCC region's logistics landscape is undergoing a significant transformation driven by emerging technology trends. The following exhibits summarize some of the notable innovations in GCC region.

Innovations in GCC Logistics

1 RoRo or 'Roll-on, Roll-off'

- RoRo allows products to roll on and off the vessel, as opposed to being lifted onboard using cranes (LoLo or load-on, load-off).

2 Telematics

- A telematics system allows the user to monitor and track various vehicle metrics or an entire fleet of vehicles, including speed, estimated time, driver behavior, fuel level, and vehicle health.

3 Relay trucking

- Relay trucking is a logistics model that involves the transfer of cargo from one truck to another at designated relay points, optimizing long-haul transportation efficiency.

4 Automation

- The hardware and software required to convert existing forklifts with autonomous capabilities are new innovations.

5 Real time supply chain visibility

- Real time supply chain visibility (RTSCV) refers to software that enables businesses to have a clear overview of entire supply chain on real-time basis.

6 Blockchain

- KSA is the first country in the GCC region to adopt blockchain technology, the first shipment began in May 2022 from King Abdul Aziz port in Dammam to Rotterdam.

7 Omnichannel distribution

- When it comes to shipping, omnichannel distribution refers to the situation in which a customer can order a product from any source and receive it.

8 MMLP or a Multi-Modal Logistics Park

- MMLP is a modern concept that provides a one-stop solution for all logistics-related activities.

Breakthroughs and Advancements in GCC Logistics

| Organization Name | Location | Year | Technology | Description |
|---|----------|------|--|--|
| Fakeeh University Hospital | UAE | 2023 | Delivery drones | Used delivery drones to transport medications to patients' homes. |
| Dubai's Roads and Transport Authority (RTA) | UAE | 2023 | Unmanned Vehicle | RTA introduced driverless electric Abras. |
| Talabat | UAE | 2023 | Autonomous food delivery robots | Talabat launched autonomous food delivery robots "Talabots". |
| Aramex | UAE | 2023 | Drones and Robots | Aramex successfully tested drone and roadside bot deliveries in collaboration with BARQ EV, Kiwibot, and various Dubai authorities. |
| Nahdi | MENA | 2022 | Oracle Transportation Management (OTM) & Oracle Warehouse Management (OWM) | Improved vehicle utilization, faster proof of delivery, compliance with regulations, better stock management and enhanced financial forecasting. |
| Aramex | Oman | 2022 | Delivery drones | Aramex conducted its first drone package delivery in Oman. |
| RAM Mounts | UAE | 2022 | Warehouse Management System | RAM Mounts, expanded to Dubai in the GCC region, offering mounting solutions to the local market. |

| | | | | |
|-------------------|------|------|---|--|
| AHOY | UAE | 2022 | Automation | AHOY specializes in innovative software and IoT hardware for logistics and supply chain operations. |
| Vamstar | UAE | 2022 | Artificial Intelligence | Vamstar secured \$9.5 million in a Series A funding round to strengthen the healthcare supply chain in the UAE. |
| FedEx Express | UAE | 2022 | Robots | FedEx Express tested the Roxo™ SameDay Bot® in Dubai Silicon Oasis. |
| TradeLens | UAE | 2022 | Blockchain | TradeLens introduced the first eBill of Lading (eBL) in the UAE. |
| Savoie and INCUBE | MENA | 2021 | Transport Management System and Warehouse Management System | Savoie and INCUBE distributed ODATiO, a cloud-native software combining Warehouse Management System (WMS) and Transport Management System (TMS). |
| Acme Intralog | UAE | 2021 | Robots | Acme Intralog enhances warehouse productivity through collaborative robots (co-bots). |

Source: Logisticsmiddleeast.com



Logistics Tech Startups in GCC

The GCC is witnessing a swift expansion in its logistics tech startup ecosystem, with a number of companies emerging to address the challenges of the region's complex and fragmented logistics landscape. The following exhibit summarizes a few notable logistics tech startups in the GCC

Logistics Tech Startups in GCC

| Company Name | Founded Year | Location | Description |
|--------------|--------------|-----------|---|
| TOROD | 2021 | Riyadh | Offers web-based shipment tracking solutions |
| Transportr | 2020 | Abu Dhabi | Offers all-in-one digital logistics solutions for land and sea freight, into and out of the UAE |
| Neo Mobility | 2020 | Dubai | Provides all-electric last-mile logistics services |
| Wasla | 2020 | Dubai | Technology company that offers a refrigerated last-mile delivery marketplace |
| Snoonu | 2019 | Doha | App based platform to book delivery and concierge services |
| RedBox | 2019 | Riyadh | Provider of smart lockers access points for receiving parcels |
| HashMove | 2017 | Dubai | Provides smart, multimodal, end-to-end digital platform for shippers and logistics providers |
| TruKker | 2016 | Riyadh | Cloud based platform offering freight forwarding solutions |
| Lyve | 2016 | Dubai | Offers AI & SaaS-enabled last-mile delivery platform for logistics |
| Salasa | 2016 | Riyadh | Provider of tech-enabled third-party logistics services |

| | | | |
|--------|------|--------|--|
| Mrsool | 2015 | Riyadh | App-based platform to avail on-demand demand delivery services from partner stores in Saudi Arabian cities |
| Quiqup | 2014 | Dubai | Provider of an on-demand delivery platform for consumers and businesses |
| Fetchr | 2012 | Dubai | App-based platform for booking delivery services |

Recent M&A Activity in the GCC Logistics Space

| Date | Target | Acquirer | Target Country | Overview of Transaction |
|--------|--------------------------|--------------------------------|----------------|---|
| Jun-23 | Transportr LTD | Investor Group | UAE | Abu Dhabi based digital freight platform receives funding. |
| May-23 | DUTCO | X-ELIO Energy SL | UAE | DUTCO and X-ELIO Announce Joint Venture to Create X-NOOR, a WorldClass renewable energy development platform in the GCC |
| Mar-23 | Calo Inc | 500 Startups management Co LLC | Qatar | Calo raises \$13 million preSeries A round. |
| Mar-23 | RSA Cold Chain DWC LLC | Americold Realty Trust | UAE | US-listed cold storage firm Americold Realty Trust is investing \$3.9Bn for a 49% interest in Dubai-based RSA Cold Chain. |
| Feb-23 | A Saffa Logistics Co LLC | A Saffa Foods SAOG | Oman | Asaffa Foods Board Approves Unit A'Saffa Logistics' Merger with Co |
| Feb-23 | Parcel Delivery WLL | Investor Group | Qatar | Parcel, Bahrain's last-mile provider raises \$1 million. |

| | | | | |
|--------|--------------------|------------------------------------|-----|---|
| Feb-23 | WeDeliver | Business Innovation Mine LLC (BIM) | KSA | BIM Ventures announced its investment in WeDelivers in a pre-series A investment round during the leap 2023 global Tech Event. |
| Feb-23 | Matajer Central Co | Investor Group | KSA | Matajer Central Co. announced that it has received \$133 million in funding from Kingdom Holding Company, UniVentures, and other investors. |

Source: GrantThornton



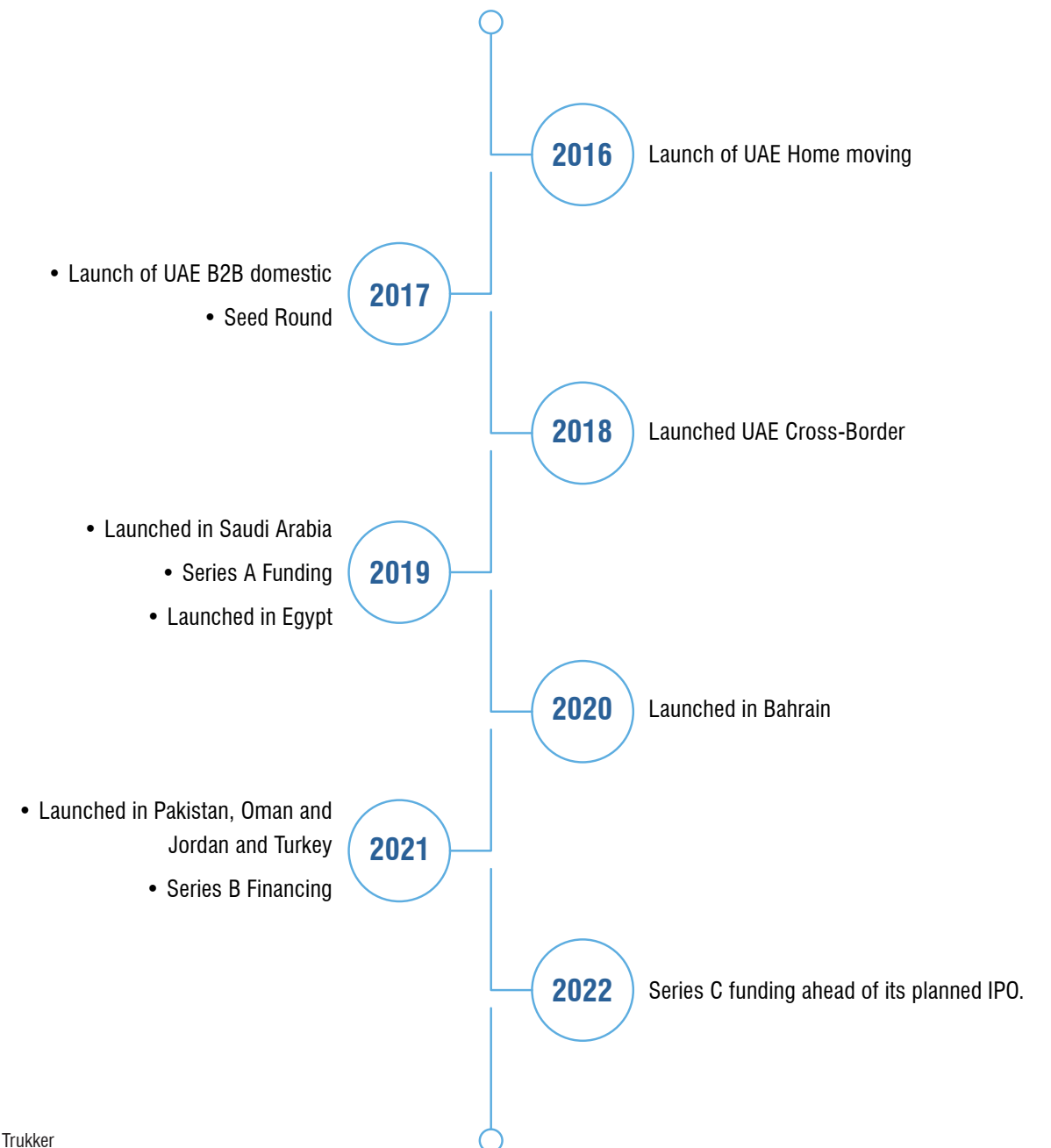
Spotlight: Trukker

Trukker is a digital freight network that provides freight matching by integrating demand and supply for land freight services. It is built on real-time data analytics. Trukker is one among Riyadh Valley Company's investment portfolio companies.

Founded in – 2016


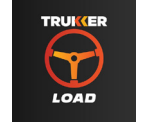

Headquarters – Saudi Arabia

Trukker's Timeline



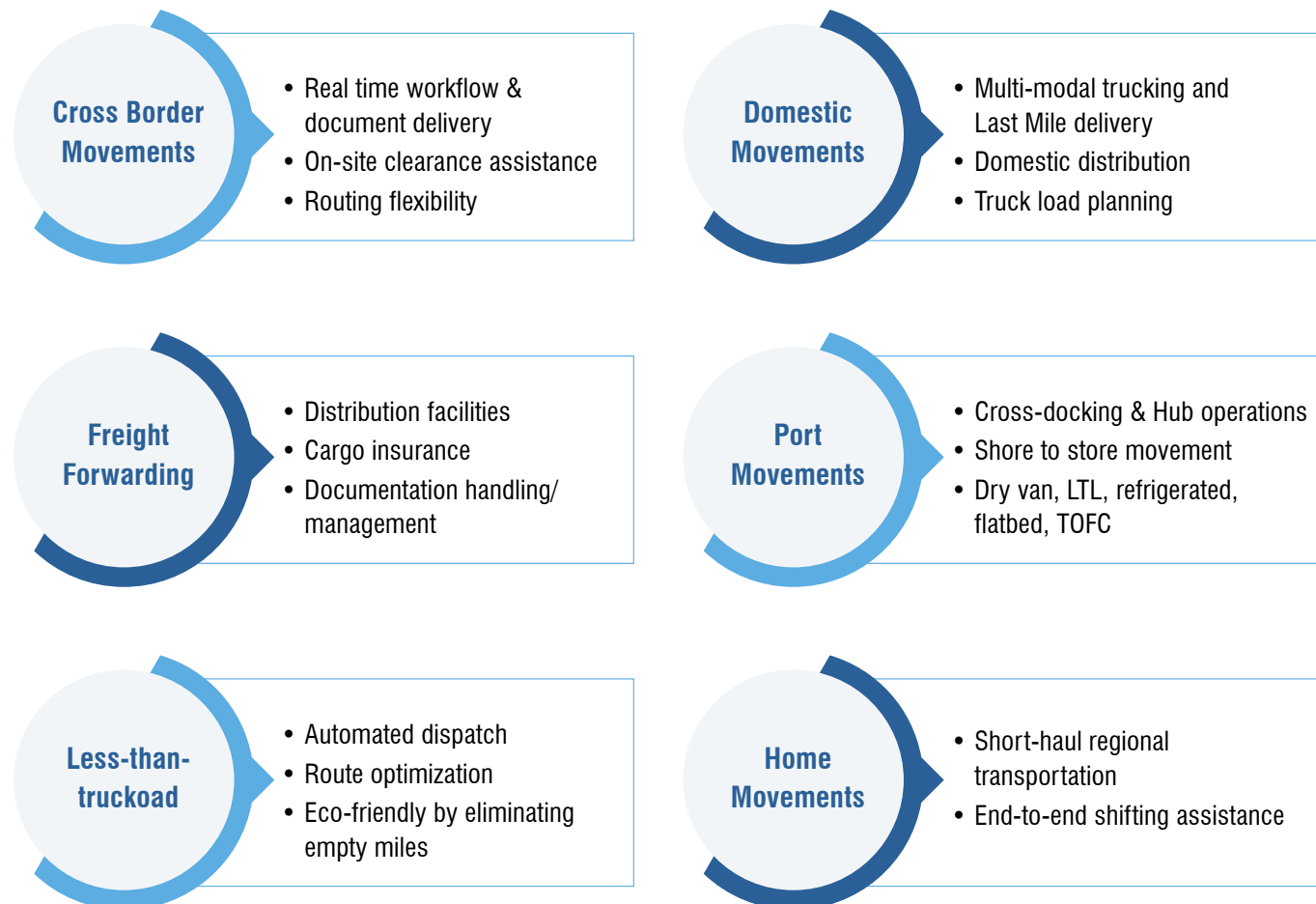
Source: Trukker

Trukker's Products

| App Description | Target |
|---|--|
|  | B2B digital freight booking platform for senders to manage their bookings and transactions. |
|  | The app offers a fully integrated marketplace experience to help carriers, operators search and book loads instantly and manage their fleet. |
|  | App used by drivers to store invoice, waybills etc. in standardised, accessible format. |

Source: Trukker

Trukker's Products



Source: Trukker

Conclusion

In conclusion, the logistics sector is on the verge of a technological revolution, driven by innovative technologies that can reshape the transportation of goods, supply chain management, and customer service. These are not just buzzwords but powerful tools. Real-time data utilization has the potential to optimize routes, cut operational costs, and enhance the customer experience. Autonomous vehicles and drones are no longer a distant dream but a tangible reality, ensuring faster and more efficient deliveries. Blockchain's promise of transparency and security can revolutionize supply chain management by reducing fraud and errors.

The future of logistics is indeed promising, thanks to the disruptive power of emerging technologies. By embracing these changes and adopting responsible, sustainable, and customer-centric practices, logistics companies can thrive in this evolving landscape. Real-life case studies have demonstrated the tangible benefits of these innovations, and an in-depth exploration of digitalization trends in the GCC logistics market has revealed the industry's shift toward a faster, smarter, and more interconnected future. The logistics sector of tomorrow exemplifies the power of innovation, and as these technologies continue to evolve, we anticipate a more efficient, resilient, and customer-centric logistics landscape.

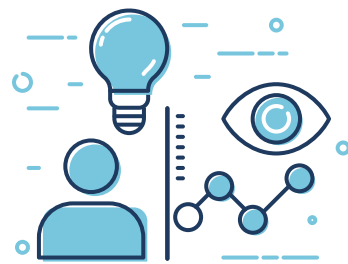
Companies and stakeholders who adapt to these changes are poised to gain a competitive edge and meet the evolving demands of the global market. The future of logistics is here, powered by emerging technologies.



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Riyadh Valley Co

Riyadh Valley Company

Riyadh Valley Company established in 2010 by Royal Decree No.116 dated 13/4/1431 AH to be the investment arm of King Saud University in the fields of Knowledge Economy and the university strategic projects.



Vision

To be the regional leader in knowledge-based investment and technology.



Mission

Riyadh Valley Company is a strategic investor, focused on leveraging the local capabilities, investing locally and globally in growth - stage businesses to create financial and strategic returns that will support the future of economic development in the Kingdom.

Investment Sectors:

Venture Capital Investments



Healthcare Investment



FinTech



Renewable energy & Sustainable Resources



Education



Information & Communication Technology



Logistics and Transportation

Strategic Investments



Innovation and R&D Projects



Commercial Projects



Educational Projects



Residential Projects



Healthcare Projects



Mixed-use Projects

Venture Capital Investment Portfolio



Strategic Investment Portfolio



SPC
سداير
للأدوية
**Sudair Pharma
Company Project**
Research center and offices



مجد العقارية
Majd Real Estate
**Majd Real Estate
Company Project**
Offices project



FOUR DIRECTIONS
الاتجاهات الموحدة
**Four Directions
Company Project**
Office project



CITY LIGHTS
سكني كمنهج
**City Lights Real Estate
Company Project**
Mixed-use project



D&M
عيادات ديرما
Derma Clinic
**Derma Clinic Company
Project**
Residential project



ساحات
SAHAT
**Sahat Al-Ardh
Company Project**
Mixed-use project



RRC
**Qasr Alaaredh
Company Project**
Building



تكوين التنمية
**Takween Altanmia
Company Project**
Offices project



NMR
**NMR Real Estate
Company Project**
Mixed-use project



السوروث المباركة
**Al-sorooth Al-
Mubarakah Company
Project**
Offices project



علم
**ELM Information
Security Company
Project**
Research & Innovation center



D&M
عيادات ديرما
Derma Clinic
**Derma Clinic Company
Project**
Healthcare project



FOUR DIRECTIONS
الاتجاهات الموحدة
**Four Directions
Company Project**
Commercial project



سينومي
cenomi
U WALK Project
Commercial project



الموحدة
UNIFIED
The Esplanade Project
Commercial project



جامعة المعرفة
ALMAAREFA UNIVERSITY
**Almaarefa University
Project**
Building project



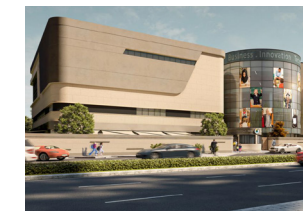
الوادي
شركة الوادي للتعليم الخاص
Arrowad for Higher Education
**Arrowad Education
Company Project**
Educational project



شركة وادي الرياض
Riyadh Valley Co
**Innovation Tower
Project**
Office building project



الوبكان
Obekan
**Obeikan Company
Project**
Commercial project



دور الكتب
Dur Alkuttab
**Dur Alkuttab Company
Project**
Educational project



omni
امنية
**Omnia Real Estate
Development Company
Project**
Commercial project