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Why Multi-Modal Mine Logistics Needs Digital Disruption

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“The line between disorder and order lies in logistics” –Sun Tzu



This time honored quote speaks out loud on the role of logistics in keeping people and goods connected. More than just a financial component, logistics is a key strategic and operational function, pivotal to the success of any business. Mining is no exception. **In fact, mining grapples with logistics challenges unique to the sector. Imagine a dumper, an excavator or any heavy equipment trundling on a mining site in a remote hinterland**. The transportation of such heavy equipment comes with steep expenses and complications that other industries don’t face. Whether you are moving the mined out ore or the equipment, you are juggling with multi-modal logistics solutions to make sure they reach the final consumption point, timely and safely. Any miner needs a complete, real-time visibility on the trail. The solution is in an end-to-end seamless digital interface that integrates all logistics solutions to optimize the value chain and tracks the movement from pit to port and to the plants that value add the ore.

How Digital Technologies Tackle the Multi-Modal Transport Challenge

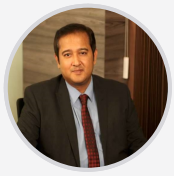
Beginning in extraction and culminating in delivery, the mining sector uses multiple modes of transportation. The outbound movement material has dependency on rail, ports and trucks. When done manually, coordination and synchronization of this movement can be fraught with risks and challenges. When the processes are not automated, you could end up facing unanticipated situations like pilferage and in-transit loss of mined material, delay in deliveries, accumulation of inventory etc. **Digital transformation of the logistics value chain promises far-reaching payoffs for miners with leaner and smarter logistics for seamless delivery.** Operating in harsh environmental conditions and exposed to bouts of market volatility, mining is under constant pressure to cut costs and time. And, yet remain profitable and deliver on time to the user industries. For the miners to ace both parameters, the solution is on automating and integrating logistics. This is where cutting edge technologies can play a signal role.

Emerging Technologies to Align Mine Logistics with Industry 4.0

Niche technologies like **Artificial Intelligence (AI)** and **Internet of Things (IoT)** hold immense potential in changing the landscape of mine logistics solutions. You can harness IoT for capturing critical data and the same data can be analyzed for improving the efficiency of haulage operations. This, in turn, can help you to figure out if you need to withdraw some trucks or ply more per hour to ensure production is optimized around fuel usage, minimal maintenance time and haul distance. In sync with **Industry 4.0** centred on disruptive technologies, advanced **IIoT (Industrial Internet of Things)** solutions can form the backbone of a fleet of autonomous haul trucks, drills and excavators for cutting costs and raising efficiency.

Robotic Process Automation (RPA), too, is emerging as a disruptor in streamlining **mine logistics**. Smart and cognitive bots are the best bets in improving efficiency and productivity of the supply chain. Global miner Rio Tinto has pioneered robotics in mining, investing billions in autonomous trucks, unmanned drills, trains and drones for its mine sites. The miner also uses RPA bots to complete back office tasks like data entry and form filling with efficiency. RPA when used in conjunction with other niche technologies, is the way ahead for process mining wherein you can deliver around 20 per cent faster, cut up to 40 per cent in warehouse costs, check lead times between process changes etc. The logistics of mining has gone a long haul. It needs a disruptive overhaul with a seamless interface.

The article was first published on CEO Priyadarshi Nanu Pany's **Medium** handle.



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