

Metals & Mining Practice

Metals and mining: Unleashing the power of technology in commodities trading

As commodities markets evolve, embracing digital can help metals and mining traders enhance competitiveness by streamlining operations and finding new sources of value—but they need to move fast.

by Ambar Gupta, Oliver Ramsbottom, and Jessica Vardy



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Commodities traders have historically profited from the inherent complexity and relative opacity of commodities markets—buyers and sellers needed traders to match supply to demand, arrange logistics, and manage risks. However, commodities markets are evolving, a consequence of both changing demand dynamics and the advent of digital, which boosts transparency. In this article, we argue that traders need to adapt quickly to avoid being left behind: the digital revolution offers several opportunities to capture value in relation both to traders’ operating models and their trading activity.

A changing industry

Commodities trading is an inherently complex business: supply chains are long, with miners often in regions far from their buyers. In 2021, for example, more than 40 percent of copper concentrates were produced in South America, and more than 35 percent of these copper concentrates were then refined to copper in China. Equally, quality matters, as different mines produce concentrates with varying levels of impurities, while tolerances for such impurities vary among buyers.

Meanwhile, supply is fragmented (with the exception of iron ore and uranium), as are commodities markets, with a host of suppliers serving a multitude of buyers. This complexity—coupled with the fact that most contracts between buyers and traders, and traders and sellers, are bilateral agreements with very little, if any, information shared with the broader market—results in a highly opaque market with opportunities for traders to create value by using their knowledge of demand and supply dynamics.

Commodities trading has yet to fully embrace digital, both in relation to the actual trading activity itself and regarding its wider application within trading companies. By way of illustration, the London Metal Exchange (LME)—the world’s oldest and largest metal market—remains home to the last

“open outcry” trading floor, despite a temporary cessation of in-person activities in response to the pandemic. The traders themselves have been relatively slow to embrace technology either to improve efficiencies or identify additional sources of value. This situation can be explained by a number of factors: volumes are smaller than for other traded assets such as foreign exchange (FX), equities, or bonds, while the instrument is usually less exotic. Moreover, the industry itself is inherently cautious and resistant to change. “If it ain’t broke, don’t fix it,” is a maxim often heard.

Nevertheless, we have identified three changes to the metals trading market that will challenge the status quo.

1. *Changing demand patterns will affect both customers and products.*

- China, with its swift adoption of digital innovation, is an increasingly important market participant and is propelling change with, for instance, the development of new derivative markets in iron ore.
- The ever-increasing focus on productivity¹ and sustainability² is resulting in greater attention to product grades, provenance, and quality, which means that upgrading technical and commercial capabilities to benefit and create trading value from this is required.
- Changes to downstream sectors are creating new growth opportunities in some commodities such as seaborne bauxite and decline in others such as thermal coal.

2. *Traders will face increasing pressure.*

- Producers facing margin pressure are engaging directly with customers to take out the middleman, along with related costs and commissions.
- New players are entering the sector while existing customers are also upgrading their sourcing and trading capabilities, which

¹ Gauthier Canart, Lukasz Kowalik, Mukani Moyo, and Raj Kumar Ray, “Has global mining productivity reversed course?” McKinsey, April 27, 2020.

² “Pressure to decarbonize: Drivers of mine-side emissions,” McKinsey, July 7, 2021.

threatens the margins and volumes of established traders.

- Growing indexation and financialization (that is, increasing use of indexes for pricing and increasing depth of futures markets) is resulting in increased transparency and pressuring margins (for example, in relation to iron ore and aluminum).

3. ***There is a shift to remote work.*** The COVID-19 pandemic forced the closure of the LME, which didn't reopen until September 2021. It now operates a hybrid model, splitting the two most important trading windows between open outcry and electronic trading. Traders will now only be responsible for setting official prices around lunchtime; closing prices, which they also set in the past, will stay electronic. LME CEO Matthew Chamberlain has been quoted as saying, "Given the data and our industry's continued move toward digitization and greater transparency, we believe it is now time to consider the long-term future of pricing at the LME—with the intention of providing certainty, which will allow all customers to make their future business decisions with confidence."³

Traders will need to adapt quickly or face being left behind. Digital offers a number of opportunities to capture value, both in relation to traders' operating models and in their trading activities.

From yesteryear to digital

Traders rely on strong relationships and networks to source and sell products. However, so-called strong relationships are often used to justify bloated and inefficient organizations. Generally, traders rely on manual processes to plan logistics, identify opportunities, and evaluate risk. What's more, in our experience these processes are nonstandard, with different teams using a variety of tools and methodologies for evaluation, decision making, and managing the trade flow. Communication, both within the organization and to customers, is typically analog (via phone, email, and even

fax) and time-consuming. We believe that the technological innovations brought by digital and advanced analytics will have significant impact on the commodity-trading industry, and those that fail to evolve will inevitably fall victim to progress.

Digitization provides opportunity for traders to standardize and automate operations, allowing them to focus on building strong relationships and identifying new opportunities. We already see examples of players using advances in technology to capture value. For example, by converting PDFs to digital orders, Klöckner Assistant automates contract capture, unlocking operational efficiencies and ensuring proper controls and compliance with automated data capture, reconciliation, and reporting to provide a single source of truth.

We see four areas of opportunity for traders to standardize and automate processes and create lean and mean operating models by adopting digital (Exhibit 1).

1. ***Collaboration—workflow.*** When traders communicate with buyers and sellers by phone, email, and fax, this approach offers no single source of truth—which enables all parties to base decisions on the same data—and relies on the individual trader to liaise with relevant departments such as risk, logistics, and contracting to update and change orders as required. Cloud collaboration—workflow tools create this single source of truth that all stakeholders can access, automatically triggering notifications at relevant touch points of the trade life cycle—internally, to customers, and to service providers such as logistics companies. This approach reduces reliance on a single individual, and therefore risk, while creating transparency.
2. ***Price calculation.*** Customer pricing is often bespoke, such that traders use their own pricing methodology, based on experience and gut feel. What's more, they spend a significant portion of their time creating and updating these models. Pricing calculators

³ "LME issues discussion paper on future market structure," London Metals Exchange, January 19, 2021.

Exhibit 1

Four opportunities for traders to use digital to improve efficiency.

Area of opportunity	Challenge	Potential solution
Collaboration/ workflow	Multiple communication formats; scattered information	Cloud-based collaboration workflow tool
Price calculation	"Bespoke" customer price/value calculations; Excel-based	Standardized price/value "calculator"
Report digitization	Paper reports from counterparties input and approved manually	3rd-party document digitization
Connected systems	Disconnected systems, data exchanged via Excel import/upload	Core system/payment system connection

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have the potential to reduce the time spent on such models, standardize the methodology used throughout the organization to create transparency, and automatically pull information from external sources to update prices.

3. **Report digitization.** Trading is still heavily paper based, requiring human intervention to translate from paper into electronic formats. There is an increasing number of tools available that can help transfer paper to digital with little or no human intervention—a move that would significantly free up traders' time.
4. **Connected systems.** Traders work across several platforms (for instance, a trading platform, FX platform, and risk platform) that are often unconnected—changes to one require manual updates in another. Commodity-trading-reporting and risk-management platforms have the ability to integrate across a number of platforms. However, software is often antiquated, and traders are hesitant to make changes given the potential disruption.

Digitization provides further opportunity to enhance competitiveness and grow revenues and profits by improving trade operations support, as shown by

the activities of producers and traders in developing digital trading support tools. Examples include Mercuria's digital logistics-optimization engine ForceField, the VAKT consortium's blockchain-based platform, ExxonMobil's use of third-party digital tools to bring greater transparency to third-party credit-risk management, and a global trading house that uses advanced analytics to forecast treatment charge and refining charge directional movements. Such tools have already demonstrated value. For instance, an iron ore trader captures up to \$5 per metric ton through improved logistics by leveraging digital tools.

As human-driven interactions within the sector lessen and market participants shift to electronic platforms and direct market activity, so too will trading activity need to change. This shift to direct market access is expected to result in decreased over-the-counter (OTC) trades and, with it, increased pricing transparency. Additionally, brokerage and service fees will no longer be a viable source of income, while arbitrage opportunities will be more difficult to identify and capture. Traders will need to develop new skills in generating proprietary information flows, in trading, and in markets.

- **Information flows.** Traders have always needed to be agile in the face of market movements, and players that can anticipate market shifts have the ability to capture value. This culture of agility has served traders well; however, changes are sweeping through the industry with unprecedented speed, and approaches will need to be updated. Information is, of course, critical in predicting any change: going forward, traders will need to look for new and innovative ways to source information—such as partnerships with customers to understand hidden inventory or access live production data from suppliers. Gaining access to and inferring monetizable insights from data, both internally and externally, will become increasingly important.
 - **Trading.** As pricing transparency increases, margins decrease. Studies of more mature asset classes, such as equities trading, have charted an increase in automated and algorithmic trading as markets move from OTC trades to electronic platforms.
- competition by providing a superior customer experience: for example, allowing customers to procure commodities through one-click ordering platforms. Internal processes will use digital to reduce the paper trail, automating approvals and information flows as far as possible. These efficiencies will allow traders currently burdened with administrative tasks to focus on developing strong relationships with upstream suppliers. It will also ensure continued supply and will also help traders in structuring deals in low-transparency markets by, for example, expanding trading through bundling to include secondary materials.
- Traders will need to adapt their strategy and their operating model to reflect market changes and the shift to digital.
- **Strategy.** As traditional metals markets (that is, trading in primary metals) become more competitive, traders have the opportunity to draw on their skills in sourcing and consolidating supply and managing complex supply chains, as well as their knowledge of buyers' requirements, to enter different markets, such as in sourcing scrap (secondary material). Traders will need to identify those skills and capabilities that set them apart from their competitors and analyze how these skills can be used in new markets.

Trader of the future

The trader of the future will rely on digital and online platforms in those markets that are highly competitive and transparent, focusing their efforts on differentiating themselves from the

The trader of the future will rely on digital and online platforms, focusing their efforts on differentiating themselves from the competition by providing a superior customer experience.

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— **Operating model.** For traders to make a success of this transformation, they must adapt their entire operating model—management infrastructure, mindsets and behaviors, and technical systems (Exhibit 2):

- **Management infrastructure:** Incentives and performance reviews will need to acknowledge and encourage the increasing use of digital.
- **Mindset and behaviors:** Traders will need to acquire or develop the skills required to build and maintain digital systems. Employees from the front to the back office will need to be proficient with digital tools and use them.

- **Technical systems:** Trading systems will need to be updated to enable digital tools.

Until now, commodities traders have been relatively slow to embrace digital; however, markets are evolving and digital will become the norm as players adapt their strategies and operating models. The winners will be able to offer an enhanced customer experience and benefit from new market opportunities, while simultaneously reducing their administrative burden. By contrast, those that are slow to respond to this digital trend risk being left behind.

Exhibit 2

Successful and sustaining changes address three elements.



Management infrastructure

Formal structures, processes, and systems must be adapted to incentivize the move to digital

- Business performance management and KPIs
- Organizational structure, roles, and responsibilities
- Capacity management



Mindsets, behaviors, and capabilities

The way people think, feel, and conduct themselves with respect to digital tools will need to be positive to sustain change

- Alignment to overall direction and need for change
- Personal motivations
- Management role modeling



Operating system

Physical assets and resources must be configured and optimized to enable digital

- Technical tools/IT
- Working procedures
- Operational excellence

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