

Metals and Mining Practice

How digital and analytics can unlock full potential in steel

SteelLens commentary

This article was a collaborative effort by Ajitesh Anand, Brigitta Boer, Dirk Durinck, Alexey Simushkin, Maxime Vandersmissen, and Michel Van Hoey, representing views from McKinsey's Metals & Mining Practice.



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Metals manufacturing companies have been successful in achieving impact at scale from digital and analytics. This was recently highlighted when the World Economic Forum selected four steel players¹ as Industry 4.0 Lighthouses among a total of over 50 organizations across all industries.

To better understand what the metals industry is doing to capture the digital opportunity, we surveyed over 30 leading metals companies across the world on their digital and analytics journey (Exhibit 1).

The survey indicates that, although the majority of players have already rolled out digital and analytics programs over the past few years and started to generate impact, a lot of potential still remains untapped (Exhibit 2). Our research indicates that there are five main success factors to scale digital and analytics. They set bold targets and strategies; they invest; they set up a flexible data and tech architecture; they build skill sets; and

they set up the right governance behind data and analytics programs.

The survey indicates that process digitization, advanced analytics, and robotization and automation are emerging as the biggest opportunities for impact, whereas new business building has had limited application until now (Exhibit 3). Though all the steel companies realized value across the value chain, most of them drew significant impact from process control in production/manufacturing as well as maintenance and engineering areas.

As per our research, robotization and automation is creating value where impact originates from new next-generation sensors and better process control loops. The players that have invested in automating their process control system have made significant gains in yield and quality improvement, reducing their overall energy consumption and maximizing throughput.

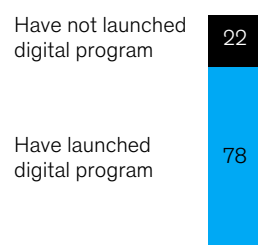
¹ BaoSteel China; POSCO South Korea; TATA Steel India; TATA Steel Netherlands.

Exhibit 1

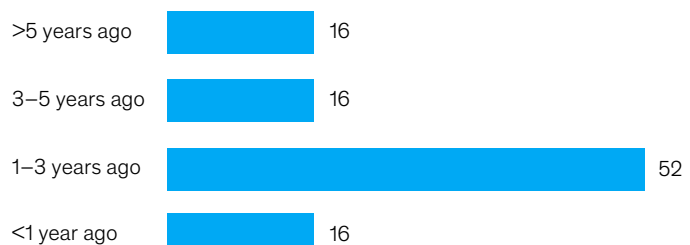
The majority of surveyed metals players have a digital program running and see it as top strategic priority.

% of respondents

Multi-year digital program



Launch date of the digital program, %



82%

of metals players see digital as top priority in their strategy

Exhibit 2

We observe a big disparity in realized impact and significant potential remains untapped for steel companies.

EBITDA uplift from digital and analytics, \$/tonne, steel companies only

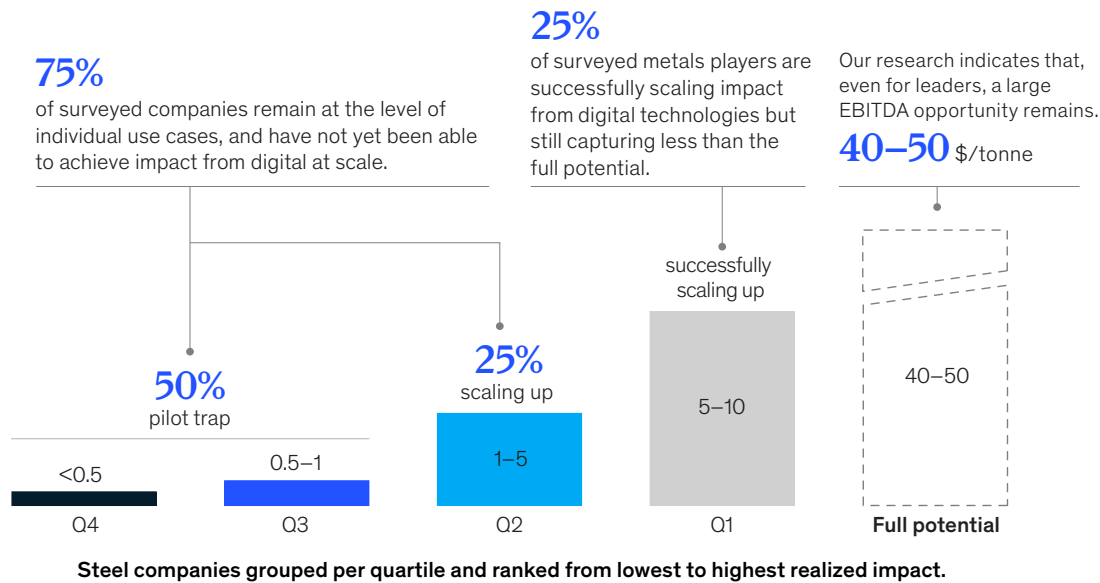


Exhibit 3

Metals players are capturing opportunities primarily across three digital levers and along the full value chain.

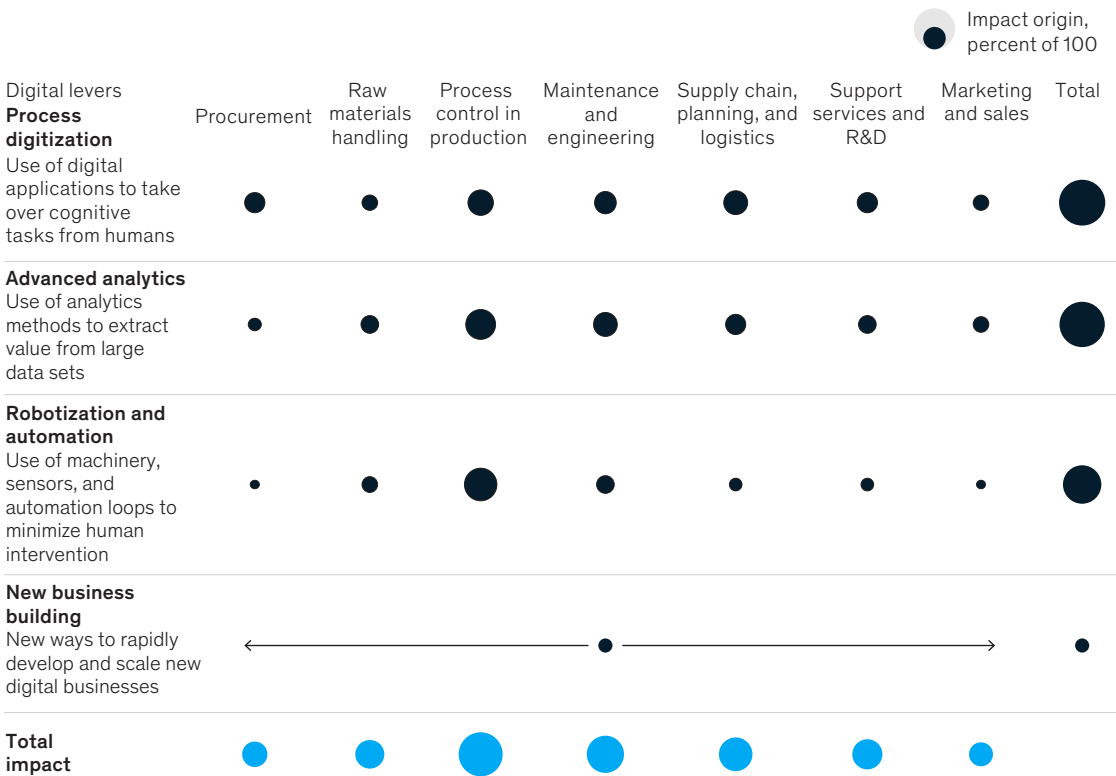
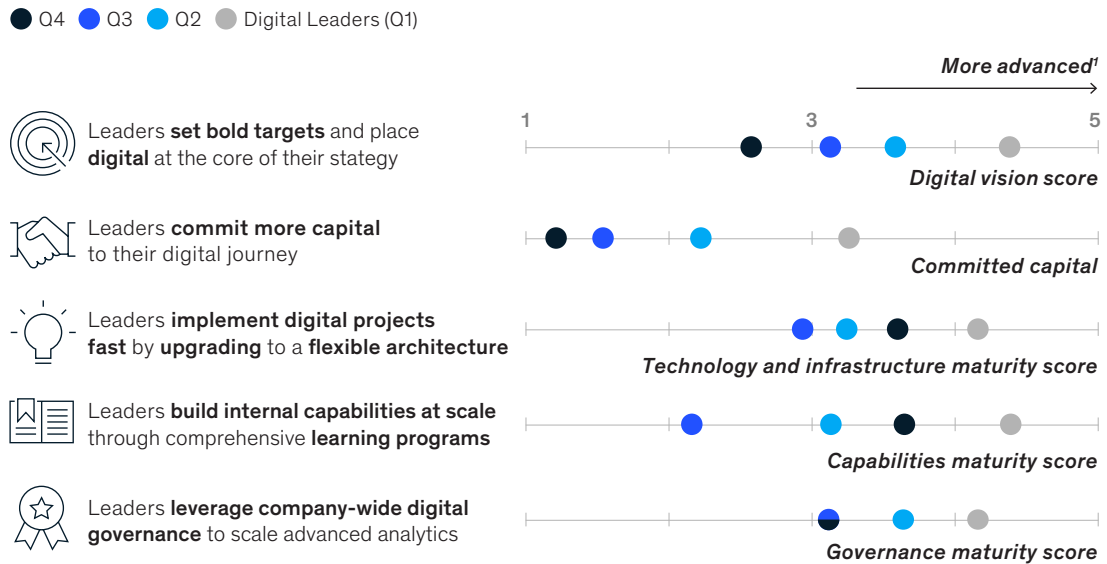


Exhibit 4

Digital leaders share a common set of enabling characteristics.



Setting **ambitious long-term targets** enables metals players to also accelerate short-term values capture from digital and analytics.

All leaders claim that they “**put digital at the core of their strategy and position as firstmover**” vs peers who “do not have a documented digital strategy or follow competitors.”

¹Pilot trap deemed as 3rd and 4th quartile.

Exhibit 5

Top five themes that companies in the pilot trap¹ group would do differently to scale up digital.²

% of respondents



Companies that fell behind indicate they would have done two things differently:

Set clear digital vision
An impactful digital transformation is a process that requires a long-term strategy

Focus more on the development of digital capabilities
The survey suggests players that train employees at scale in digital and analytics tend to capture more value

Note: Responses do not add up to 100%

¹Pilot trap deemed as 3rd and 4th quartile.

²Out of a long list of components not all mentioned here (eg, build external ecosystem, agile way of working, develop buy-in from business, continuous pipeline of use cases, active change management, etc).

The survey clearly highlights the unprecedented impact from digital and analytics application in steel that traditional approaches could never achieve. According to our view, companies that successfully harness the potential of digital will be the first to capture breakthrough increases in top-line revenues, capture the next 10–15 percent of cost improvement, and leapfrog ahead of the rest of the industry. However, digital transformations can fail

easily ... Most of them get stuck in the digital use case “pilot trap” as they focus on deploying digital use cases (Exhibit 5). To prove successful, digital transformation should take into account three key areas: business, organization, and technology, as well as return-on-investment payback mindset with CxO attention and sponsorship.

Ajitesh Anand is a solution manager in McKinsey's Brussels office, where **Dirk Durinck** is a senior expert, **Alexey Simushkin** is an expert, and **Maxime Vandersmissen** is an associate partner. **Brigitta Boer** is an associate partner in the Budapest office. **Michel Van Hoey** is a senior partner in the Luxembourg office.

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