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The future of AI will be written in nuts and bolts

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LONDON, (Reuters) — For private equity investors, the real question surrounding artificial intelligence isn't whether it will transform industries. It's how those transformations will translate into real returns.

Amid the excitement around model-building and chatbot launches, the best opportunities may be found far from Silicon Valley — in the world's ageing manufacturing plants, testing facilities, and industrial supply chains.

We're calling AI the fourth industrial revolution. The keyword is "industrial."

Global investment in AI infrastructure is expected to exceed $7 trillion over the next decade, spanning everything from hyperscalers' data centers to the power grids that feed them. For that investment to pay off, trillions of dollars of productivity gains need to show up in traditional industrial businesses.

Manufacturing remains one of the least digitized sectors of the global economy, despite sitting at the heart of everything from energy systems to consumer goods.

In a 2023 report, the consultancy group McKinsey, opens new tab estimates that revitalizing productivity in key U.S. manufacturing sectors could boost U.S. GDP by a cumulative $10 trillion by 2030, while Bain, opens new tab finds that "factory of the future" tools can drive productivity improvements for machinery companies exceeding 30%.

Yet most manufacturers have captured only a fraction of this value. In a sector where margins are tight and downtime is costly, the transformative potential here is enormous.

For leading manufacturers, AI is about offense. Large players can use it to widen their lead, increasing uptime, compressing costs, tightening quality control, and expanding margins at a pace others can't match. In this, they become price setters, not price takers, and over time, those advantages should compound.

For commoditized businesses, the equation is harsher. For them, AI is not about upside; it's about survival. Without it, inefficiencies become more visible, costs become harder to absorb, and competitiveness becomes harder to sustain.

In this context, AI isn't a science experiment. It's a revolution that is going to divide winners and losers.

THE UPCYCLING OPPORTUNITY

Nowhere is this dynamic clearer than among mid-sized manufacturers across the U.S., Germany and China. These are companies that produce goods that form the backbone of the global economy.

These businesses aren't short on demand; they're short on digital capability. Their inefficiencies, underused assets, and fragmented supply chains leave significant productivity gains on the table.

Until recently, retooling those facilities required vast capital expenditure. Today, AI-driven software, smart sensors, and 'digital twins' – digital versions of real-world systems and products – have the potential to unlock dramatic productivity gains for pennies on the dollar.

It's the industrial equivalent of upcycling - using intelligence, not just investment, to renew what already exists. A 2024 analysis, opens new tab by the National Institute of Standards and Technology (NIST) estimates that full digital twin adoption across U.S. manufacturing could deliver roughly $27 billion in annual economic impact through improved decision-making and operational optimization – without replacing equipment.

The path isn't frictionless. Retrofitting legacy machinery often reveals hidden complexity – obsolete controls, incompatible hardware, or simply a lack of usable historical data. In many cases, the first step is not optimization but digitization.

Where those hurdles can be cleared, the payoff can be substantial. AI systems can analyze thousands of data points – from shop floor layouts and machine utilization to workflow bottlenecks – and recommend changes that minimize downtime, improve worker safety, and

lift output. Over time, production lines gain the ability to learn as they operate, predicting failures, improving quality, and optimizing energy use in real time.

BEYOND THE FACTORY GATE

The real opportunity extends beyond the factory floor. For industrial businesses, margins are shaped as much by demand planning, inventory management, and logistics as by manufacturing itself.

Demand planning has historically been driven by spreadsheets, intuition, and historical data. AI can forecast demand more accurately, reduce working capital tied up in inventory, improve supplier reliability, and optimize end-to-end supply chains. When demand planning improves, everything downstream should benefit.

Treated as an integrated system, the gains are far larger than any single efficiency initiative. This isn't about marginal improvement. It's about building resilient supply chains.

This, in turn, represents the next potential wave of private equity value creation.

PE firms own thousands of mid-sized industrial businesses - large enough to benefit meaningfully from AI, but too small to build these capabilities alone. The key is helping these companies invest through complexity, build talent, modernize data infrastructure, and embed AI into decision-making.

AI isn't just another technology cycle. It's a new industrial revolution – one that will be defined not by code alone, but by how intelligently we modernize the factories, grids and supply chains that keep the world running.

(The views expressed here are those of Anuj Ranjan, CEO of Brookfield's Private Equity Group and Brookfield Business Partners. This column is for educational purposes only and should not be construed as investment advice.)

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