



CRITICAL LESSONS FROM THE IMPLEMENTATION OF LARGE-SCALE AI TECHNOLOGIES

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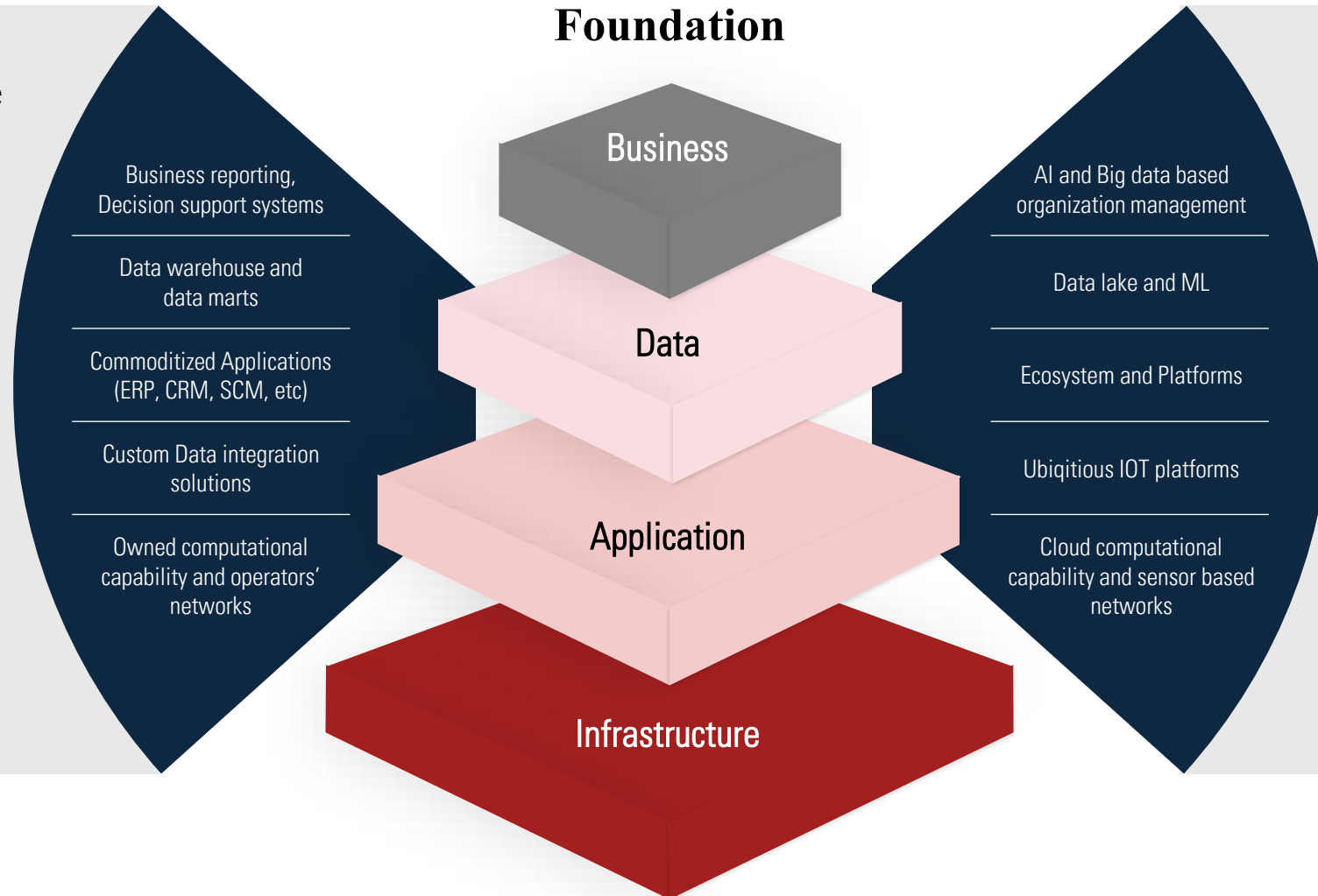
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Enterprise Architecture Foundation

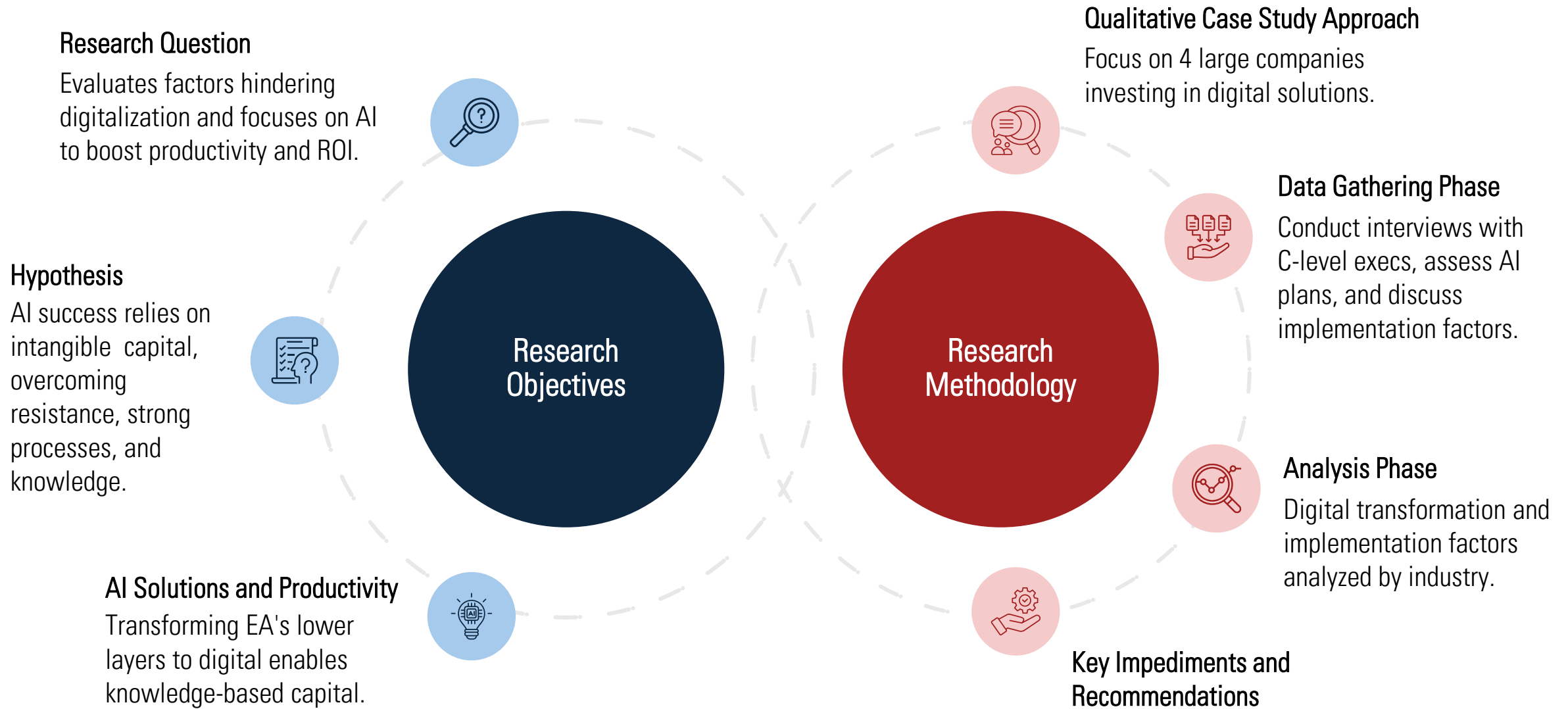
Existing Enterprise Architecture

- Digitalization hasn't met expected productivity gains.
- AI investments show unclear returns, with some reducing productivity.
- Siloed EA causes fragmented knowledge and limits integration.

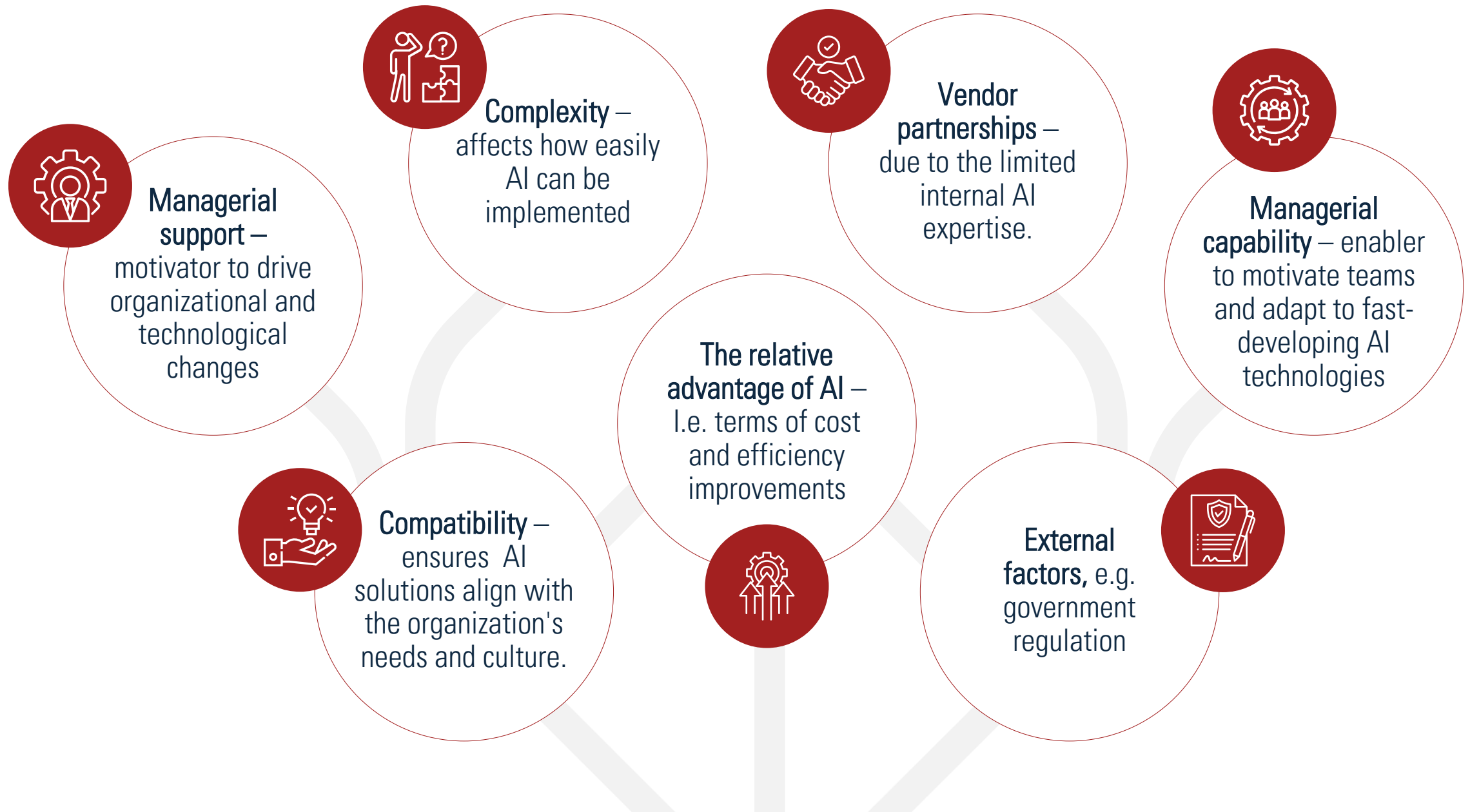


Digital Enterprise Architecture

- A critical mass of new AI technologies is needed for business impact.
- In digital EA intangible capital needs to be accumulated across all levels.



FACTORS INFLUENCING AI ADOPTION



CASE 1: ENERGY GENERATION HOLDING

Project Overview

Launched by a major Eastern European energy firm to automate generation plants.

Objectives

Enhance reliability with data and automation, and optimize costs through AI-driven management.

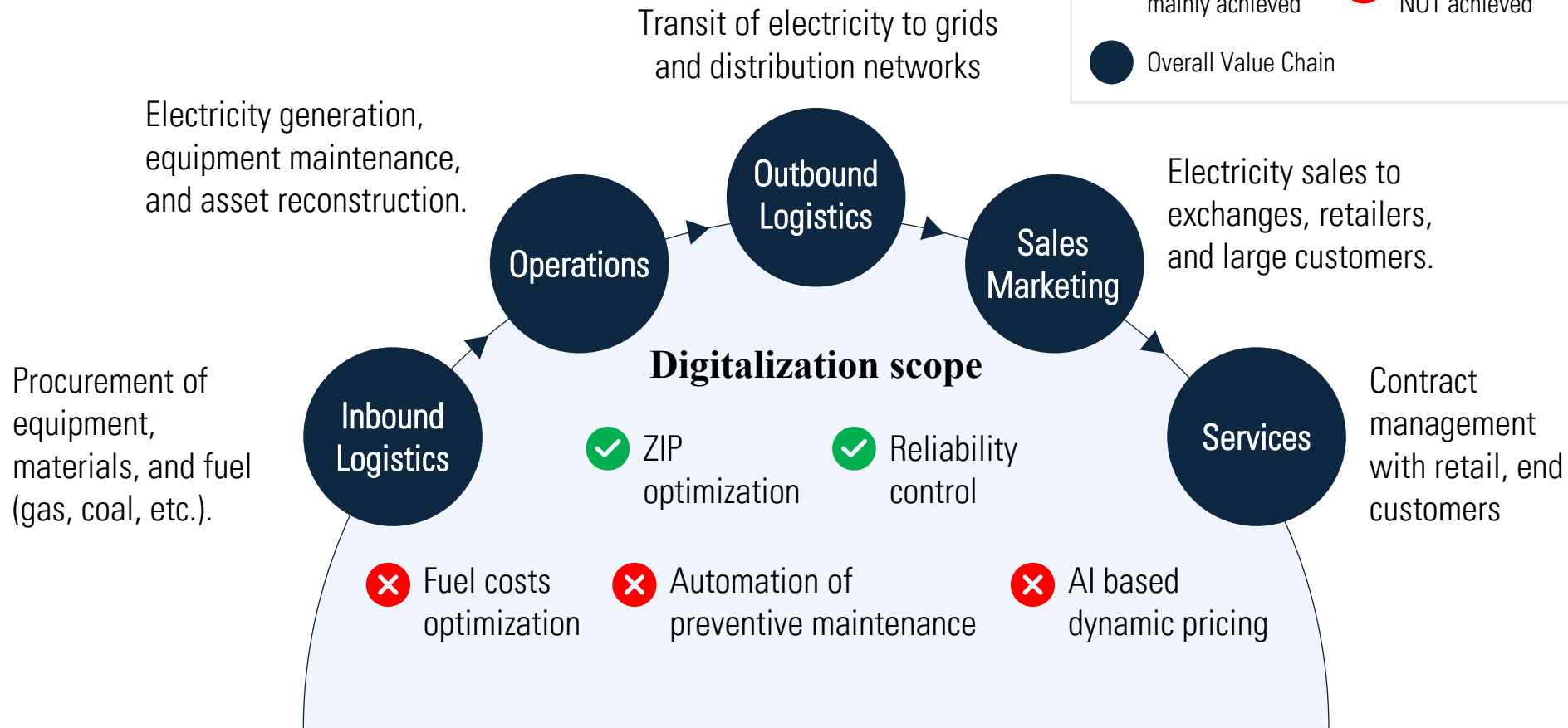
Expected Economic Benefits

Fuel savings, optimized maintenance, and ROI in years 3-4.

Investment Costs

Allocated to infrastructure and data management

Electricity generation value chain



Despite significant investments and partial automation success, the project has failed to deliver economic returns due to fragmented implementation, lack of data integration, and insufficient managerial skills to drive necessary process changes.

CASE 2: ENERGY GRID AND DISTRIBUTION HOLDING

Project Overview

Automating electricity distribution and optimizing energy monitoring.

Objectives

Enhance reliability, reduce costs, and manage energy demand efficiently.

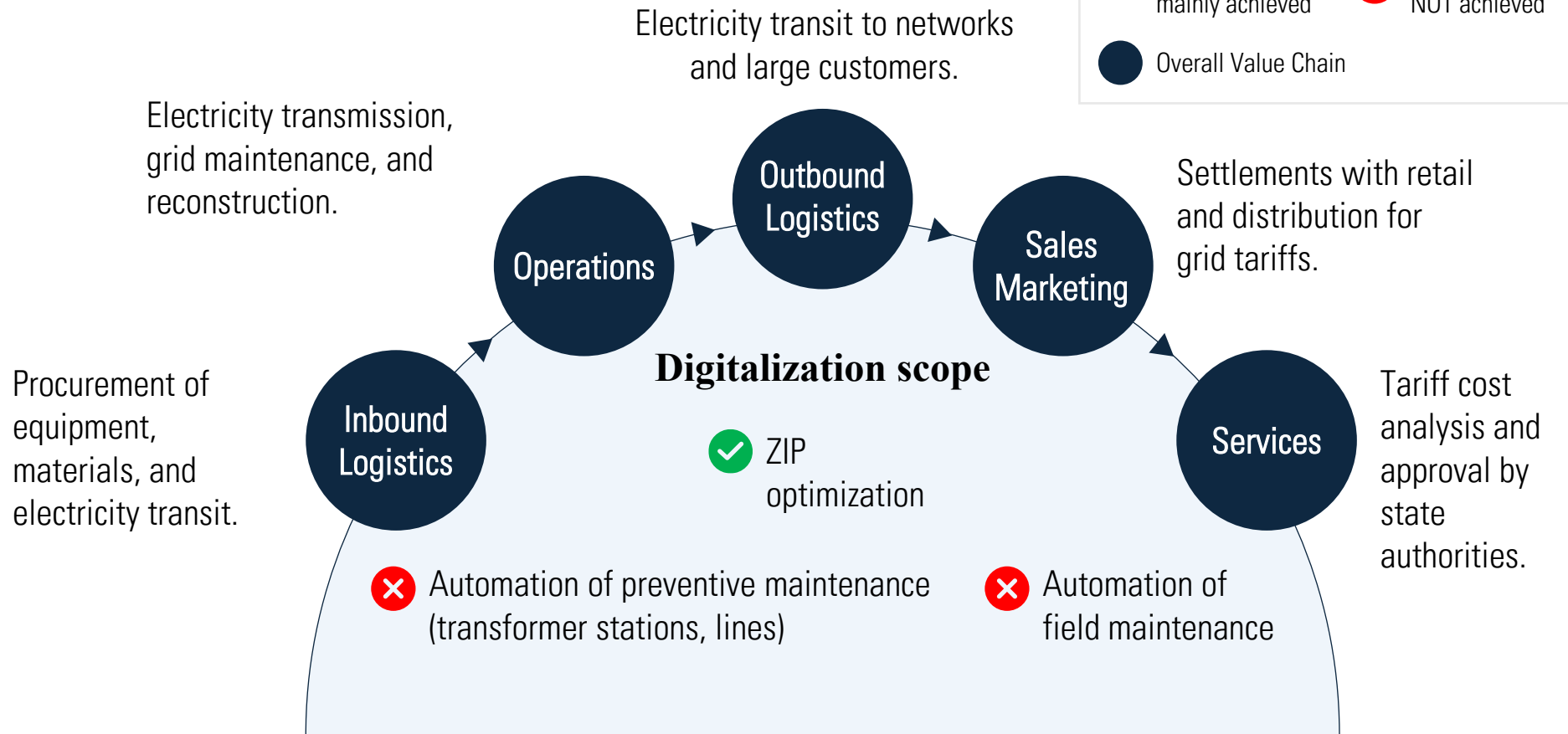
Expected Economic Benefits

Real-time decisions with telematics and AI, enhanced monitoring.

Investment Costs

Infrastructure and AI investments for ZIP optimization and real-time management.

Electricity grid value chain



After five years, economic benefits are seen in infrastructure upgrades, while Big Data and AI remain in pilot mode due to the need for organizational changes despite strong managerial motivation and support.

Project Overview

AI-driven raw material tracking, fleet management, and crop intensification.

Objectives

Automate monitoring, improve fleet efficiency, and enhance crop management with AI.

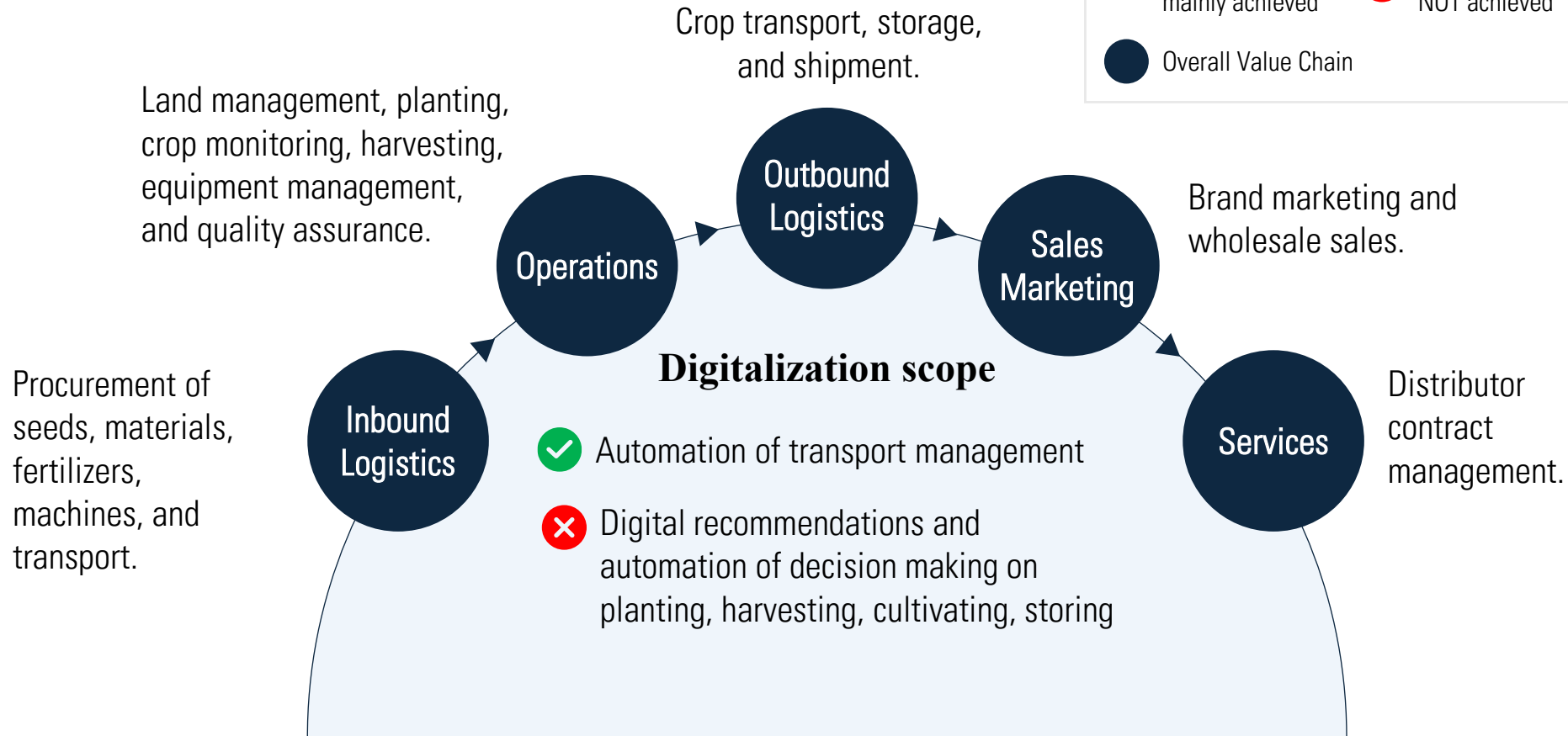
Expected Economic Benefits

Save 20% on materials, improve fuel efficiency, and boost crop productivity with AI.

Investment Costs

Over \$30M in IoT, AI, and data integration.

Agriculture: beet growing value chain



The agro-company's market-driven AI initiatives achieved limited benefits due to underestimated complexity and lack of organizational changes.

Project Overview

Enhance security, safety, and city economics with transport and utility monitoring.

Objectives

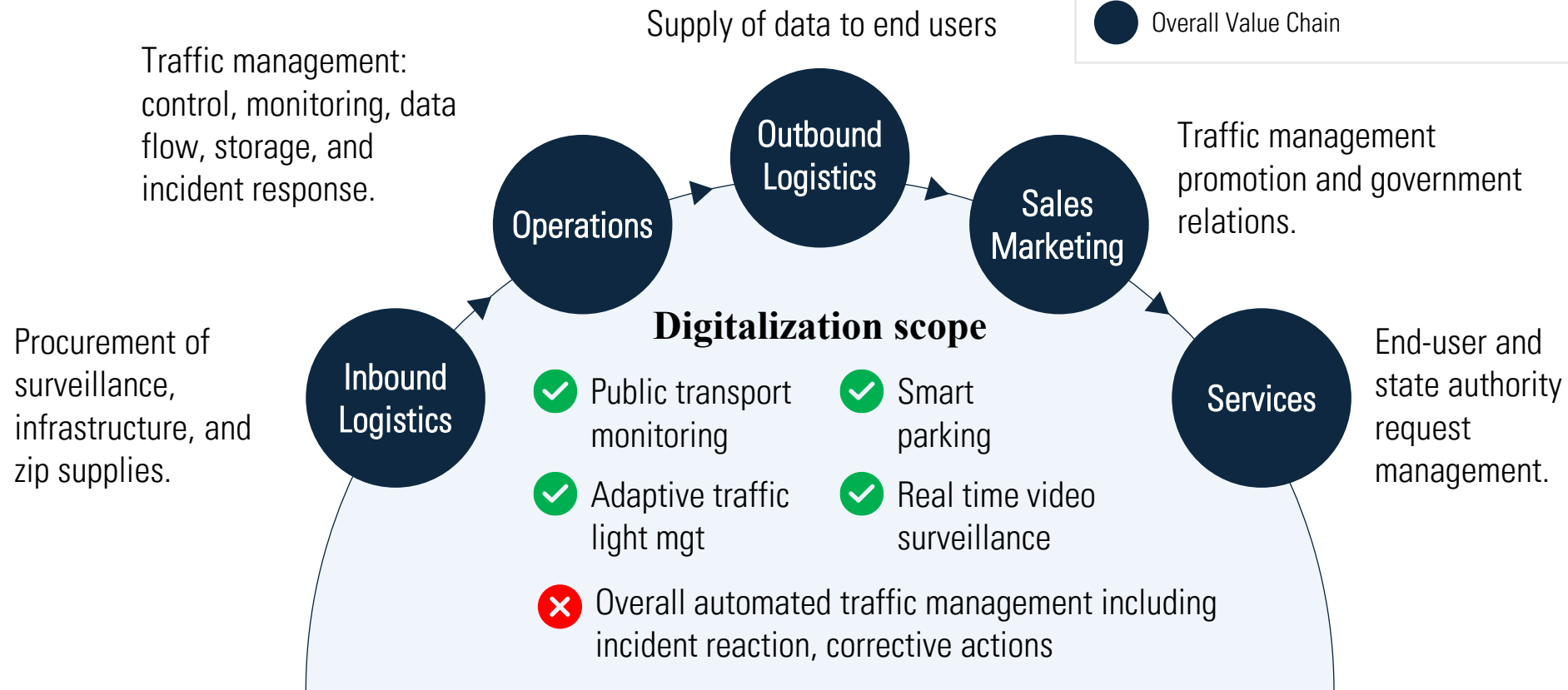
Optimize traffic routing, boost speed, and improve public transport and parking.

Expected Economic Benefits

Reduce congestion, enhance safety, and improve traffic management with AI.

Investment Costs

90,000 cameras, GPS vehicles, IoT telematics, and transport apps.

Agriculture: beet growing value chain

Despite strong funding and regulatory support, the city's automated traffic system faced delays and complexity, leading to simpler, more publicly explainable solutions.

SYNTHESIS OF AI ADOPTION FACTORS

Impact of key factors on digital/AI implementation initiatives.

	Managerial Support	Managerial capability	Compatibility	Complexity	Relative advantage	Gov regulation	Vendor support
Energy generation	+	+	+	-	+	+	±
Energy Grid	+	-	+	-	+	+	±
Agro-holding	+	±	-	-	+	N/A	+
City - Traffic mgt	+	-	-	-	+	+	+



Factor had crucial negative impact in achieving planned results



Factor had some negative impact in achieving planned results



Factor had both positive and negative impacts, was not crucial for achieving results;



Factor had mostly positive impacts



Factor had crucial positive impact on results achieving

- Digitalization projects met timelines and budgets but achieved only 20-30% of expected returns, while advanced AI systems struggled due to data gaps and complexity.
- Success was hindered by underestimated complexity, misalignment with business needs, and insufficient management capabilities for organizational changes

Effectiveness of Digitalization

Focus on automating operations, effective for routine tasks.

Underestimated Complexity

Management underestimated AI complexity, causing implementation challenges.

Lack of Compatibility

Many large-scale AI implementations were unjustified, and misaligning

Inadequate Managerial Capability

Management failed to assess AI's business value, leading to poor decisions

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Business



AI automation creates opaque processes; many implementations weren't justified when simpler solutions would suffice; management lacked clear business rationale for AI recommendations.

Data



Growing data volumes create opaque systems rather than insights; management restricts investments in non-normalized data without clear business outcomes.

Application



App flexibility demands require agile multi-service architecture; management prioritizes familiar business functions over integration platform investments.

Infrastructure



Proliferating infrastructure components create costly, unmanageable environments; management underestimates data sources needed for business processes and decisions.

AI transformation not a tech project—it's a business reinvention powered by AI



Align AI initiatives with business capability maturity:
Digitize foundational enterprise layers before scaling AI at the business level.



Build intangible capital early: Invest in knowledge, data stewardship, and cross-functional skills for AI-driven change.



Prioritize managerial upskilling: Equip leadership with AI fluency and change management to drive adoption.



Start small, scale with relevance:
Avoid overengineered AI; start with process automation and expand where value exists.



Redesign business models before implementing AI:
Successful AI requires rethinking value chains, decision rights, and incentives, not adding AI to existing processes.