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Supply Chain + Energy + Artificial Intelligence

The Impact of AI on Workflows

Current State and Future Trends (1-5 Years)

Transforming Energy, Supply Chain, and Finance
Industries

2025



✦ Executive Summary

AI: From Experimental Tech to Critical Infrastructure

Key insights driving strategic decisions across industries



92%

Of companies plan to increase AI investments in the next 3 years

\$

\$13T

Potential global economic contribution by 2030



30%

Of current work hours could be automated by 2030



97M

New jobs created by 2026, offsetting 85M job losses



Introduction: AI in Workflows

What it means and why it matters now

What is AI in Workflows?

The integration of AI (ML, NLP, RPA) into business processes to automate tasks, augment human decision-making, and optimize operations end-to-end.

Why Now?

- AI has moved from experimental pilots to proven, scalable solutions.
- Hyperautomation is enabling complete process transformation.
- Agentic AI systems can now act autonomously with minimal intervention.
- Competitive pressure is rising as early adopters gain productivity.





The AI Revolution

From Experimental to Mainstream

The transformation is accelerating faster than predicted



2020-2022: Experimental Phase

- Pilot projects and proof-of-concepts
- Limited to tech-savvy early adopters
- Isolated use cases with unclear ROI
- High technical barriers to entry
- Skepticism about practical business value
- Limited integration with existing systems

AI was viewed as futuristic, not ready for production



2024-2025: Mainstream Adoption

- Enterprise-wide deployments at scale
- 92% of companies increasing AI investments
- Clear, measurable ROI and efficiency gains
- Accessible tools and platforms for all businesses
- AI becoming business-critical infrastructure
- Seamless integration and hyperautomation

AI is now essential for competitive advantage



Current State Overview

AI Adoption & Investment Trends



92%

Increasing AI Investment

Over the next 3 years



1%

AI Maturity Leaders

Consider themselves "mature"



<1% → 30%

Agentic AI Adoption Trajectory

Projected to 2028

AI Investment (% of IT Spend)





Key Technologies Driving Change

The AI technology stack transforming workflows



Machine Learning (ML)

35.6% of AI market

Algorithms that learn from data patterns to make predictions and decisions without explicit programming

Applications: Predictive maintenance, demand forecasting, risk assessment



Natural Language Processing

Major AI segment

Enables machines to understand, interpret, and generate human language

Applications: Document processing, chatbots, sentiment analysis, automated reporting



Computer Vision

Fast-growing segment

Allows systems to derive information from visual inputs like images and videos

Applications: Quality inspection, drone monitoring, security, inventory tracking



Robotic Process Automation

Core automation layer

Software robots that automate repetitive, rule-based tasks across applications

Applications: Data entry, invoice processing, report generation, system integration



Large Language Models

Emerging powerhouse

Advanced AI models trained on vast text data, capable of complex reasoning and generation

Applications: Content creation, code generation, analysis, customer service



Digital Twins

Strategic enabler

Virtual replicas of physical systems that enable simulation and testing

Applications: Process optimization, scenario modeling, predictive testing, risk mitigation



Agentic AI

The New Frontier of Autonomous Workflows

Agentic AI

Autonomous AI that understands intent, learns from context, and executes complex workflows with minimal human oversight.

Unlike AI that assists, Agentic AI acts independently.

Key Capabilities



Intent Understanding

Interprets goals and context, not just commands.



Autonomous Decision-Making

Makes informed decisions based on learned patterns.



Multi-Step Execution

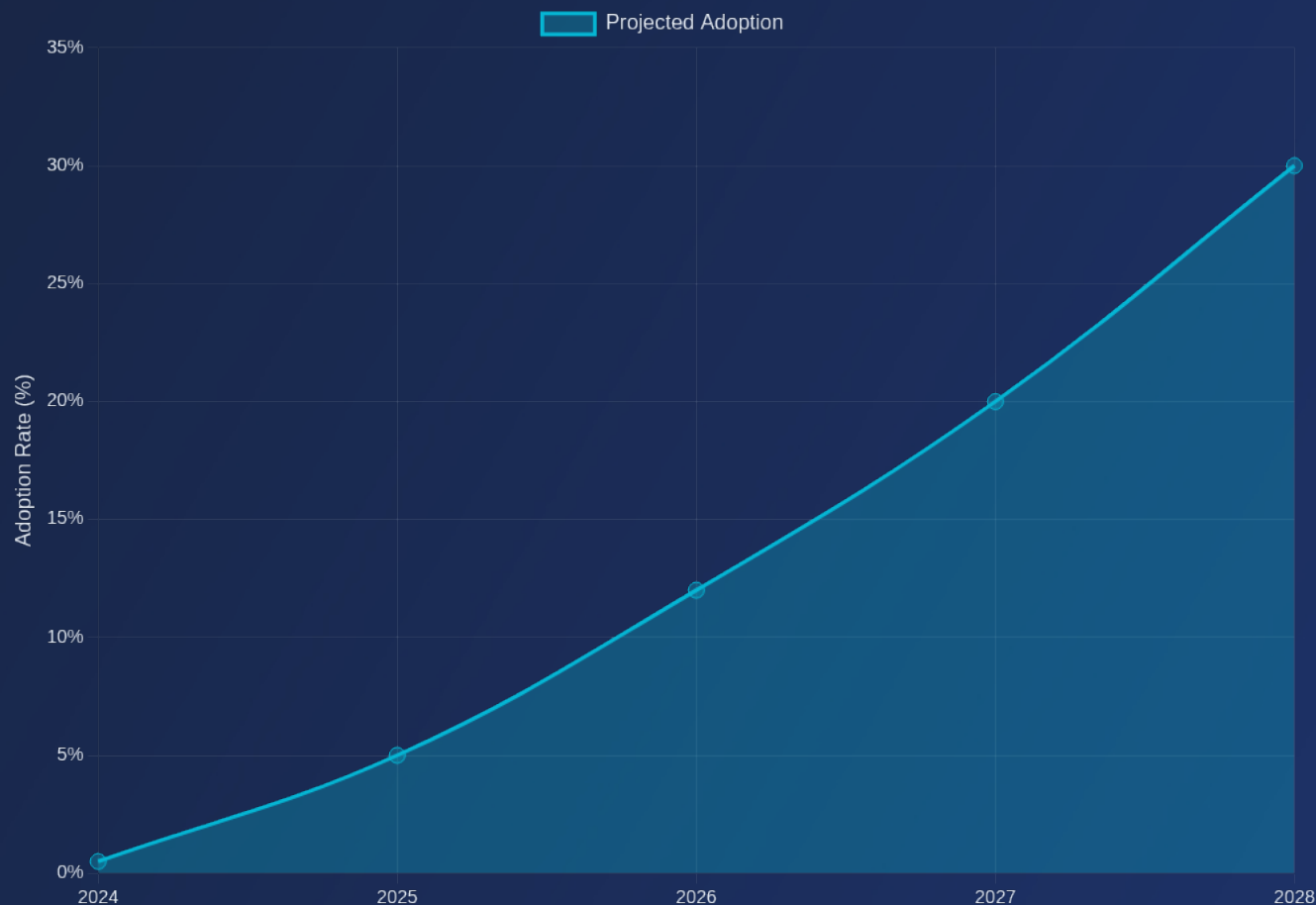
Orchestrates complex workflows across different systems.



Continuous Learning

Adapts and improves from outcomes and experience.

Agentic AI Adoption Trajectory





Hyperautomation

End-to-End Process Transformation

Beyond Single-Point Automation

Hyperautomation integrates AI, ML, and RPA to automate and transform complex, end-to-end business workflows.



AI & Machine Learning

Intelligence Layer

Learns patterns, makes predictions, and adapts to changing conditions.



Robotic Process Automation

Execution Layer

Executes repetitive tasks across systems without human intervention.



Process Intelligence

Analytics Layer

Monitors workflows, identifies bottlenecks, and measures performance.



Integration Platforms

Orchestration Layer

Connects systems, synchronizes data, and ensures seamless workflow.

Business Impact

- ✓ Reduced redundant activities
- ✓ Improved oversight & governance
- ✓ Scalable operational efficiency
- ✓ Enhanced user experience



Automation in Action

Current Applications Across Industries

⚡ Energy

🔑 Predictive Maintenance

ML algorithms predict equipment failures before they occur

📈 Demand Forecasting

AI optimizes power distribution based on consumption patterns

⚡ Automated Inspections

Drones with computer vision inspect infrastructure

🌿 Carbon Management

AI optimizes emissions control and carbon capture systems

🚚 Supply Chain

🎯 Predictive Analytics

Forecast accuracy improved from 67% to 92% (Unilever case)

📍 Real-Time Tracking

Automated exception management and shipment visibility

⚡ Warehouse Robotics

520,000+ AI robots deployed (Amazon example)

⚠️ Risk Detection

Early identification of supply disruptions

\$ Finance

📄 Invoice Processing

Automated data extraction and reconciliation

🛡️ Fraud Detection

Real-time analysis of transactional patterns

📅 Financial Close

Automated month-end and quarter-end processes

📉 Credit Risk Assessment

Dynamic risk scoring using multiple data sources



Augmentation vs Automation

Two complementary approaches to AI in workflows

Automation

Replacing Repetitive Tasks

AI systems performing tasks independently, removing human involvement from repetitive processes.

Characteristics:

- Replaces manual labor
- Operates 24/7 without fatigue
- Handles high-volume, routine tasks
- Reduces errors and ensures consistency

Examples:

Data entry, invoice processing, report generation.

Best For:

High-volume, rule-based processes.



BOTH
Complementary
Strategies

Augmentation

Enhancing Human Capabilities

AI tools amplifying human intelligence with insights, recommendations, and decision support.

Characteristics:

- Enhances human judgment
- Provides real-time insights
- Supports better, faster decisions
- Keeps humans in control

Examples:

Predictive analytics, AI research assistants, risk dashboards.

Best For:

Complex, judgment-intensive decisions.



AI-Powered Decision Making

Real-Time Insights and Predictive Analytics

From Reactive to Predictive: AI transforms decision-making velocity and accuracy



Decisions based on historical reports and gut instinct



Decisions based on real-time data, predictive models, and scenario analysis



Faster response to market changes, reduced risk, optimized outcomes



Real-Time Analytics

Process massive data streams instantly to surface actionable insights as events unfold

Immediate response to emerging opportunities and threats



Scenario Modeling

Simulate multiple future scenarios to understand potential outcomes before taking action

Reduced risk through what-if analysis and strategic planning



Predictive Forecasting

Use historical patterns and external signals to predict future trends with high accuracy

Proactive resource allocation and demand planning



Automated Recommendations

AI generates optimal action recommendations based on objectives and constraints

Faster decisions with data-backed confidence



Collaboration & Integration

Connected Enterprise Platforms

Breaking Down Silos for Unified Workflows

AI-powered platforms connect disparate systems, synchronize data, and automate workflows across departments, eliminating the inefficiencies of traditional isolated tools.

Integrated AI platforms can yield a 40% faster time-to-decision.



Unified Data Access

A single source of truth across all systems eliminates data silos.



Automated Workflows

Tasks flow automatically between tools, reducing handoff delays.



Real-Time Sync

Changes propagate instantly, ensuring all teams have current info.



Cross-Team Visibility

Stakeholders can see process status, improving coordination.



Intelligent Orchestration

AI routes work to the right system or person automatically.



Continuous Improvement

The platform learns from outcomes to optimize future workflows.



AI in Energy Sector

Current Applications and Impact

Market Snapshot

Current Market (2025):

\$18.14B

Projected Market (2032):

\$55.76B

CAGR:

17.4%

Leading Region:

Asia Pacific



3x

Market growth by 2032



24/7

Autonomous monitoring



30-50%

Maint. cost reduction

Current Applications



Predictive Maintenance

ML models predict equipment failures to reduce downtime.

Impact: Less downtime, optimized maintenance, longer asset life.



Demand Forecasting

AI forecasts energy demand to optimize grid stability and allocation.

Impact: Improved grid stability, reduced waste, better resource use.



Infrastructure Inspection

Drones with CV inspect pipelines and power lines safely.

Impact: Safer, faster inspections with lower operational costs.



Emissions Optimization

AI optimizes carbon capture and emissions control systems.

Impact: Supports regulatory compliance and sustainability goals.



Energy Industry Future

1-5 Year Outlook: Next-Generation Applications



Agentic Digital Twins

Timeline: 2-4 years

Virtual replicas of energy infrastructure that make autonomous decisions to optimize performance in real-time

Capabilities:

- Self-optimizing power grids
- Autonomous load balancing
- Predictive scenario testing
- Real-time adaptation to demand shifts

Unprecedented efficiency and resilience in energy systems



AI-Driven Robotics

Timeline: 1-3 years

Autonomous robots performing hazardous tasks in extreme environments without human supervision

Capabilities:

- Offshore platform maintenance
- Nuclear facility inspections
- Underwater pipeline repairs
- Disaster response operations

Enhanced safety, 24/7 operations, access to previously unreachable assets



Blockchain + AI Trading

Timeline: 3-5 years

Secure, automated energy trading platforms using AI for price optimization and blockchain for transparent transactions

Capabilities:

- Peer-to-peer energy exchange
- Real-time pricing optimization
- Automated smart contracts
- Decentralized grid management

New revenue models, democratized energy markets, improved grid efficiency



AI in Supply Chain

Real-Time Visibility and Optimization

Explosive Growth Sector

Current Market (2025)

\$9.94B

Projected (2034)

\$192.5B

CAGR

39%

Nearly 20x market growth expected over the next decade.

Unilever Success Story

67% → 92%

Forecast accuracy improvement via AI analytics.



Predictive Analytics

Models to predict demand, inventory, and disruptions.

- ML for demand patterns
- External signal integration
- Automated reorder triggers

Improved forecast accuracy, reduced stockouts.



Real-Time Tracking

End-to-end visibility with automated exception alerts.

- IoT & GPS integration
- Automated exception detection
- Predictive delivery windows

Fewer delays, faster issue resolution.



Warehouse Automation

AI-powered robotics for fulfillment and inventory.

- Autonomous picking & packing
- Intelligent inventory placement
- Ex: Amazon's 520,000+ robots

Massive efficiency gains & reduced labor costs.



Supply Chain Future

1-5 Year Outlook

The Autonomous Supply Chain

Self-optimizing networks that predict disruptions, reroute shipments, and operate without human intervention.



Autonomous Transportation

Self-driving vehicles revolutionizing freight (Timeline: 2-5 years).

Long-Haul Trucking: Level 4 autonomous highway routes.

Last-Mile Delivery: Autonomous robots & drones.

Port Operations: Automated container handling.

Fleet Optimization: AI coordination of vehicle fleets.

Impact: 40-50% cost reduction, 24/7 operations, improved safety.



AI Risk Management

Predictive systems to detect vulnerabilities (Timeline: 1-4 years).

Early Warnings: AI monitoring global signals for disruption prediction.

Simulations: Digital twins to test mitigation strategies.

Contingency: Automated activation of backup suppliers & routes.

Sustainability: AI optimizes for carbon footprint & circular economy.

Impact: Resilient supply chains, reduced risk exposure.



\$ AI in Finance

Automated Processes and Fraud Detection

Finance Sector Transformation

AI is fundamentally reshaping financial operations, moving from manual, error-prone processes to automated, intelligent workflows

From reactive to predictive financial management

Core Benefits

🕒 80-90% reduction in processing time

✅ Near-zero error rates in data entry

🛡️ Real-time fraud detection

📋 Enhanced regulatory compliance

👥 Improved customer experience



Automated Processing

Invoice processing, reconciliation, data entry, and report generation fully automated

Example: Accounts payable processing time reduced from days to hours



Credit Risk Assessment

Dynamic risk scoring using multiple data sources for accurate credit decisions

Example: Risk assessment time reduced from weeks to minutes



Fraud Detection

Real-time analysis of transactional patterns to identify anomalies and suspicious activity

Example: Fraudulent transactions blocked within milliseconds



Financial Close

Month-end and quarter-end processes automated for faster, more accurate financial reporting

Example: Close time reduced by 40-50%



Finance Industry Future

1-5 Year Outlook: Predictive Analytics & Integrated Platforms

The Intelligent Finance Function: Predictive, Autonomous, Transparent

Autonomous Decision-Making

Explainable AI (XAI) for Trust

Agentic AI Workflows



Predictive Financial Planning

Timeline: 1-3 years

AI scenario modeling to predict financial outcomes with high accuracy, enabling proactive strategy.

Capabilities:

- Real-time cash flow forecasting
- Dynamic budget adjustments
- Automated variance analysis



Explainable AI (XAI)

Timeline: 2-4 years

Transparent AI systems provide clear reasoning for decisions, ensuring regulatory compliance and trust.

Capabilities:

- Audit trails for AI decisions
- Plain-language explanations
- Bias detection and mitigation



Fully Integrated Platforms

Timeline: 2-5 years

Unified AI platforms connect all financial systems for seamless data flow and process orchestration.

Capabilities:

- End-to-end process automation
- Agentic AI workflow orchestration
- Continuous system optimization



Near-Term Trends (1-3 Years)

Agentic AI Adoption & Immediate Productivity Gains

What's Coming Next

★ Agentic AI Goes Mainstream

Adoption grows from <1% to 15-20% by 2027.

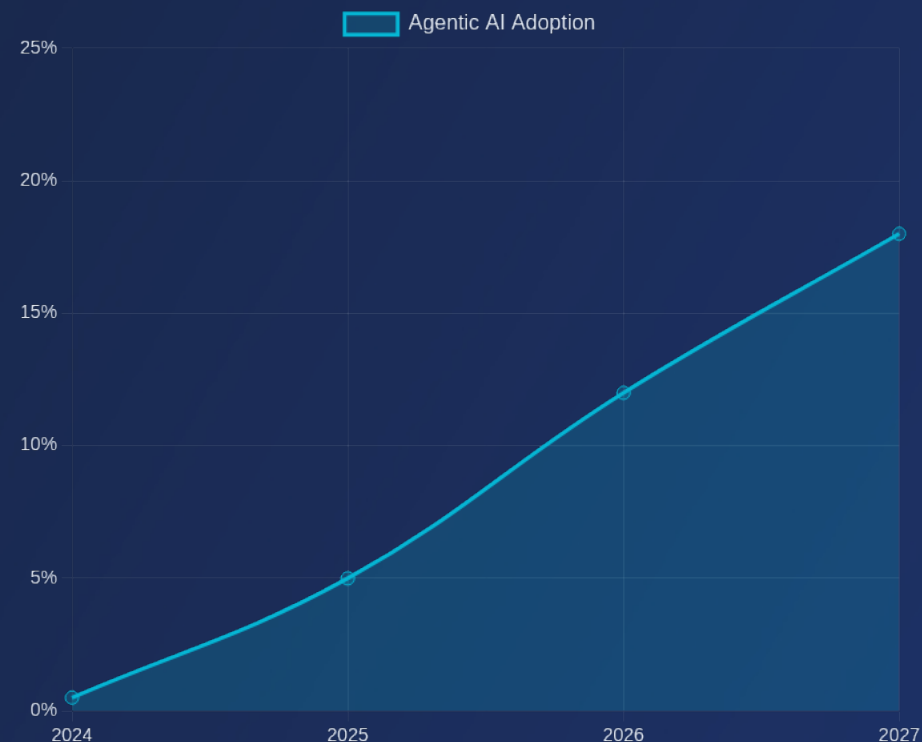
🔗 Hyperautomation Expands

Moving from isolated tasks to end-to-end transformation.

✨ Generative AI in Production

LLMs integrated into core business processes.

Agentic AI Adoption (1-3 Years)



Expected Impact (1-3 Years)

📈 **20-30%**

Productivity gain in automated workflows

📊 **0.5-0.9%**

Annual US labor productivity growth via Gen AI



Medium-Term Trends (3-5 Years)

Workforce Transformation & New Job Creation

The Great Workforce Transition

Up to 30% of work hours could be automated by 2030, creating more jobs than it displaces.

Net positive: 97 million new jobs vs. 85 million displaced by 2026

Jobs
Declining
85 Million

By 2026

Office & Data Entry

High decline due to automation

Routine Customer Service

Significant automation impact

Primarily routine, repetitive roles

Transitions
Required
12 Million

By 2030 (US alone)

Workers needing to change careers:

Key Challenges:

- Skills gap in emerging high-tech areas
- Need for large-scale reskilling programs

Workforce development is key to competitive advantage.

Jobs
Growing
97 Million

By 2026

Healthcare & STEM

Strong growth and high demand

Business, Legal & Management

AI-augmented strategic roles

Growth in roles requiring creativity & strategic thinking.



Productivity & Economic Impact

Growth Projections and Efficiency Gains

Projected Economic Impact

\$ \$13 Trillion

Global economic activity by 2030

Source: McKinsey

⚡ 30%

Of work hours could be automated

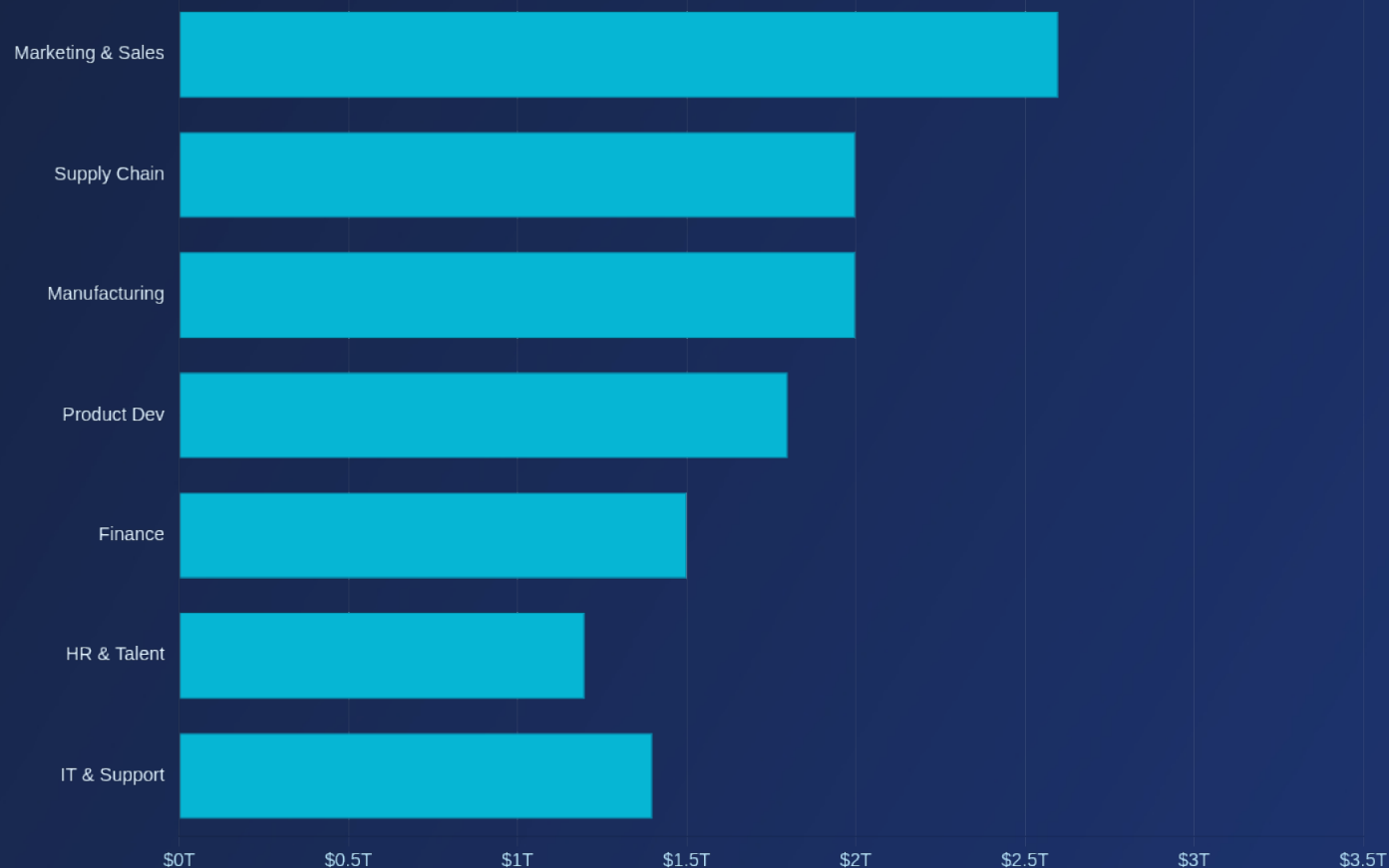
Potential across all industries by 2030

📊 0.5-0.9%

Annual US labor productivity growth

From Generative AI alone, sustained over 10+ years

Projected Global Economic Value from AI by 2030



What This Means for Business

- ✓ Deploying AI effectively will yield significant competitive advantages.
- ✓ Productivity gains enable growth without proportional headcount increases.



Workforce Transformation

Skills Evolution and New Roles

The Changing Nature of Work: Human-AI Collaboration

Success in the AI era requires new skills and mindsets. Those who adapt will thrive.

12M job transitions by 2030 (US)

40% need reskilling in 3 years

AI skills > 30% salary premium

Critical Skills for AI Era

Technical Skills

- AI & data literacy, prompt engineering
- Digital platform proficiency
- Automation tool management

Human Skills (Increasingly Valuable)

- Complex problem-solving
- Creative thinking & innovation
- Emotional intelligence
- Adaptability & continuous learning

AI handles routine tasks; humans focus on judgment and creativity.

Emerging Job Categories



AI Workflow Designers

Optimize human-AI collaboration.



AI Trainers & Supervisors

Teach AI systems and monitor performance.



AI Ethics & Governance Specialists

Ensure responsible AI deployment.



Data Storytellers

Translate AI insights into business narratives.

These roles will be commonplace by 2028.



Challenges & Considerations

Implementation Barriers and Ethical Concerns



Implementation Barriers



AI Maturity Gap

Few companies are mature in AI deployment, lacking experience.

Implication: Widespread inexperience and lack of best practices.



Data Quality Issues

AI requires high-quality, structured data, which many firms lack.

Implication: Requires significant data infrastructure investment.



Integration Complexity

Connecting AI with legacy systems is technically challenging.

Implication: Leads to longer timelines and higher costs.



Skills Shortage

Lack of AI expertise at all levels, from technical to leadership.

Implication: Competitive hiring and need for internal training.



Change Management

Employee resistance to AI adoption and workflow changes.

Implication: Demands cultural transformation and communication.



Ethical Concerns & Governance



Algorithmic Bias

AI can perpetuate or amplify biases present in training data.

Implication: Risk of unfair outcomes and reputational damage.



Job Displacement Anxiety

Fear of automation displacing workers creates workforce resistance.

Implication: Requires transparent communication and reskilling.



Data Privacy & Security

AI systems often require access to sensitive data, raising concerns.

Implication: Robust data governance and security are essential.



Lack of Transparency

`Black box` AI models can make decisions without clear reasoning.

Implication: Explainable AI (XAI) is critical for trust.



Regulatory Uncertainty

Evolving AI regulations create significant compliance challenges.

Implication: Need for adaptive governance frameworks.



Strategic Imperatives

What Businesses Need to Do
Now

Act Now: The AI Competitive Advantage Window is Closing

Companies that move decisively on AI will build sustainable advantages. Those that wait risk being disrupted.



Assess Current State

- Audit workflows for AI potential
- Evaluate AI maturity & benchmark
- Identify quick wins



Invest in Foundations

- Build robust data infrastructure
- Establish AI governance
- Secure executive sponsorship



Start with Targeted Pilots

- Choose high-value use cases
- Deploy quickly, learn, & measure
- Scale what works, kill what doesn't



Invest in People

- Launch reskilling programs
- Hire AI talent strategically
- Foster a continuous learning culture



Build Ethical AI Practices

- Establish AI ethics guidelines
- Implement bias detection
- Ensure transparency & compliance



Think Long-Term

- Develop a 3-5 year AI roadmap
- Plan for agentic AI & hyperautomation
- Continuously monitor AI landscape



Conclusion

The Path Forward for AI-Enabled Workflows

We Stand at a Historic Inflection Point

AI represents a **fundamental transformation** in how work gets done. The organizations that embrace this change strategically and decisively will define the next era of business.

✦ The Transformation is Real

- AI adoption growing to 30% by 2028
- \$13T economic value by 2030
- 30% of work hours automated
- From experimental to critical

⚡ Action Required

- Start with targeted pilots
- Invest in data infrastructure
- Reskill your workforce
- Build AI governance
- Act short-term, think long-term

🧑 Human-AI Collaboration

- Poised to create 97M new jobs
- Humans focus on creativity, judgment
- AI handles routine & augments strategy
- Success requires technical & human skills

Will you lead the AI transformation, or be forced to follow?

Begin Your AI Journey Today

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