



From Digital Transformation to AI-Enabled Decisions: Business Analytics, Artificial Intelligence Adoption and Business Performance in the United States (2018 - 2026)

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Abstract

Artificial intelligence (AI) is increasingly reshaping business analytics, organizational processes, and decision-making in the United States. This study examines the evolution of AI adoption from early digital transformation to contemporary AI-enabled business applications between 2018 and 2026. A longitudinal secondary-data design was employed, integrating evidence from the U.S. Census Bureau's Annual Business Survey (ABS) and Business Trends and Outlook Survey (BTOS), Bureau of Labor Statistics (BLS) productivity statistics, Business Dynamics Statistics, and Bureau of Economic Analysis (BEA) Digital Economy Accounts, complemented by a structured literature review. Findings indicate that AI adoption increased from approximately 3.0% of firms in 2018 to 19.8% by May 2026, although changes in BTOS measurement after November 2025 limit direct comparability across the full period. Adoption was substantially higher in Information and Finance and Insurance and among larger firms. Among AI-using businesses, applications were concentrated in Sales and Marketing (52%), Strategy and Business Development (45%), and Information Technology (41%). Employment-weighted AI use in worker tasks (41%) exceeded firm-weighted adoption (23%), highlighting the broader workforce implications of organizational AI integration. U.S. productivity also increased during 2024–2025, although the available aggregate evidence does not establish a causal relationship with AI adoption. The study concludes that AI's business value depends on integration with digital infrastructure, Business Analytics capabilities, human capital, and adaptive organizational processes. Strengthening these complementary capabilities, particularly among smaller firms, is therefore essential for inclusive and sustainable AI-enabled business transformation.

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Introduction

Artificial intelligence (AI) has increasingly become an important component of contemporary business strategy, organizational transformation, and data-driven decision-making. Firms across industries are incorporating AI, machine learning, predictive analytics, automation, cloud computing, and related digital technologies into production, marketing, customer service, information technology, strategic planning, and other business functions. The increasing availability of large datasets and computational resources has strengthened the capacity of firms to convert data into actionable intelligence, thereby changing the relationship between information, analytics, organizational decision-making, and business performance.

However, the emergence of AI in business should not be interpreted as a phenomenon that began with the recent generative-AI boom. Earlier evidence from the U.S. Census Bureau demonstrates that firms were already adopting artificial intelligence and related advanced technologies before 2020. The Annual Business Survey (ABS), for example, collected nationally representative information on firms' use of technologies including artificial intelligence, cloud computing, specialized software, robotics, and other advanced technologies. For the 2018 reference year, approximately 3.0% of reporting U.S. firms reported some level of AI use, while 32.4% reported use of cloud-based technologies (U.S. Census Bureau, 2019) ^[7]. This evidence establishes an important pre-generative-AI baseline.

Research based on the ABS further demonstrates that advanced technology adoption was highly heterogeneous across U.S. firms. Technology adoption tended to be more prevalent among larger and older firms and was concentrated in sectors with stronger technological and knowledge capabilities (Zolas *et al.*, 2020) ^[12]. Earlier Census research similarly showed that AI-related technologies were already being used across multiple sectors of the U.S. economy, although adoption rates were relatively low when measured across all firms (U.S. Census Bureau, 2023) ^[8].

The period after 2022 represents a major transition. The development and commercialization of generative AI technologies, combined with growing investments in cloud computing, data infrastructure, machine learning, and business analytics, substantially increased managerial attention to AI. The U.S. Census Bureau's Business Trends and Outlook Survey (BTOS) subsequently provided high-frequency information on AI use among U.S. businesses. During the initial BTOS measurement period in late 2023, approximately 3.8%–3.9% of businesses reported current AI use, demonstrating that contemporary AI adoption was initially relatively limited but rapidly increasing (U.S. Census Bureau, 2023) ^[8].

Subsequent BTOS evidence indicates substantial growth. Between December 2025 and May 2026, approximately 17%–20% of U.S. businesses reported AI use, with the national estimate reaching 19.8% in the survey period ending May 3, 2026 (U.S. Census Bureau, 2026) ^[11]. Adoption was considerably higher among larger firms: approximately 37% of firms with at least 250 employees and 32% of firms with 100–249 employees reported AI use, compared with less than 20% among firms with four or fewer employees (U.S. Census Bureau, 2026) ^[11].

This transition raises an important research question: How has the United States moved from early digital and advanced-technology adoption toward broader AI-enabled business analytics and organizational transformation, and what does this transition imply for business performance?

The question is particularly important because technology adoption alone does not necessarily produce improved business performance. From a Resource-Based View (RBV), technologies generate competitive value when firms possess complementary resources and capabilities that are valuable, difficult to imitate, and effectively organized (Barney, 1991) ^[1]. Dynamic Capabilities Theory similarly emphasizes the capacity of firms to sense opportunities, seize them, and transform organizational resources in response to technological and market change (Teece *et al.*, 1997) ^[4]. Thus, AI should be viewed not simply as a technological asset but as part of a broader organizational capability involving data, analytics, human capital, managerial processes, and decision systems.

Business analytics provides an important bridge between data and AI-enabled decision-making. Analytics allows organizations to transform raw data into descriptive, diagnostic, predictive, and prescriptive information that can support managerial decisions. AI increasingly extends these capabilities by automating pattern recognition, prediction, classification, content generation, optimization, and decision support. The resulting process can be represented as:

Data → Business Analytics → AI Adoption → Organizational Transformation → Decision Quality → Business Performance

The present study therefore expands the analytical period beyond the recent AI boom and examines the transition from early technology adoption to contemporary AI diffusion. Rather than treating 2018–2026 as a single homogeneous AI series, the study uses a two-phase longitudinal framework. The first phase examines early AI and advanced-technology adoption using ABS evidence, while the second examines contemporary AI diffusion using BTOS. This approach avoids inappropriate comparisons arising from differences in survey design and measurement definitions.

Theoretical Framework

This study is underpinned by the Resource-Based View (RBV) and Dynamic Capabilities Theory. The RBV posits that firms derive competitive value from valuable resources and complementary capabilities that are effectively organized and deployed (Barney, 1991) ^[1]. In the context of this study, digital infrastructure, data, cloud technologies, specialized software, Business Analytics expertise, human capital, and artificial intelligence represent complementary resources that can support data-driven decision-making and business performance. Thus, AI adoption alone is not assumed to generate superior outcomes; rather, its potential value depends on the availability and effective integration of complementary organizational capabilities.

Dynamic Capabilities Theory complements the RBV by emphasizing firms' ability to sense technological opportunities, seize them through investment and implementation, and transform organizational resources and routines in response to changing environments (Teece *et al.*, 1997) ^[4]. This perspective is particularly relevant to the transition from foundational digitalization to contemporary AI adoption. Firms must not only acquire digital and AI technologies but also integrate them into business functions, redesign workflows, develop workforce capabilities, and adapt decision-making processes.

The study conceptualizes Business Analytics as a capability that connects digital resources with AI-enabled decision-making. The theoretical pathway is therefore represented as *Data and Digital Resources → Business Analytics Capability → AI Adoption → Functional Integration → Organizational Transformation → AI-Enabled Decision-Making → Business Performance*. The framework recognizes that industry and firm-level differences in resources and adaptive capabilities may contribute to variation in AI adoption and integration. However, because the study relies primarily on secondary descriptive data, the theoretical relationships are interpreted as conceptual associations rather than direct causal tests of RBV or Dynamic Capabilities Theory.

Objectives of the Study

The study specifically seeks to:

1. examine the evolution of advanced technology and AI adoption among U.S. businesses from 2018 to 2026, distinguishing early AI adoption from contemporary AI diffusion;
2. compare AI and advanced-technology adoption across major industries and firm-size categories;
3. examine the transition from early digital and advanced-technology adoption to contemporary AI-enabled Business Analytics and business-function integration;
4. assess the association between technology and AI adoption, organizational transformation, productivity,

employment, and selected U.S. business-performance indicators; and

5. synthesize the Business Analytics capabilities, organizational resources, and managerial conditions associated with successful AI implementation and data-driven decision-making.

Methodology

Research Design

The study adopted a longitudinal secondary-data research design covering the period 2018–2026. The analysis integrates multiple U.S. federal statistical sources rather than relying on a single dataset. This approach is appropriate because no single U.S. survey provides a fully comparable annual series for AI adoption, business analytics, organizational transformation, productivity, and business performance across the entire study period.

The study therefore uses a two-phase longitudinal design:

- **Phase I (2018–2022):** Early digital and advanced-technology adoption
- **Phase II (2023–2026):** Contemporary AI diffusion and AI-enabled business transformation

The distinction is essential because the ABS and BTOS employ different sampling and measurement approaches, and the BTOS AI question itself was revised in November 2025.

Data Sources

Annual Business Survey

The ABS provides information on technology adoption among U.S. businesses. The 2018 reference-year technology data include measures of artificial intelligence, cloud-based technologies, robotics, specialized software, and other advanced technologies (U.S. Census Bureau, 2019) ^[7]. For the 2018 reference year, 141,731 firms, representing approximately 3.0% of reporting firms, were classified as AI users. The corresponding proportion reporting cloud-based technology use was 32.4% (U.S. Census Bureau, 2019) ^[7].

Business Trends and Outlook Survey

The BTOS provides high-frequency information on business conditions and expectations and became an important source for measuring contemporary AI adoption. Early BTOS evidence indicated that approximately 3.7% of businesses reported AI use in September 2023, increasing to approximately 5.4% during the early months of the survey period (U.S. Census Bureau, 2024) ^[9]. Later evidence showed continued expansion. By May 2025, current AI adoption had approached 9.5% in BTOS data (U.S. Census Bureau, 2025) ^[10]. By the survey period ending May 3, 2026, approximately 19.8% of businesses reported AI use (U.S. Census Bureau, 2026) ^[11].

An important measurement change occurred in November 2025. Earlier BTOS questions focused on AI use in producing goods or services, whereas the revised question asked whether firms used AI in any business function. This change substantially broadens the scope of measured AI activity and means that estimates before and after the revision should not be interpreted as perfectly comparable (U.S. Census Bureau, 2026) ^[11].

Bureau of Labor Statistics Productivity Data

Productivity data from the BLS were used to provide macroeconomic and industry-level performance context. Total factor productivity (TFP) captures changes in output that are not directly explained by changes in measured labor and capital inputs and is therefore useful as a broad indicator of productive efficiency. Private nonfarm business TFP increased by 1.5% in 2024 and 0.8% in 2025. Labor productivity increased by 3.0% in 2024 and 2.2% in 2025 (BLS, 2026). These measures are interpreted as contextual performance indicators rather than causal estimates of the effect of AI.

Business Dynamics Statistics

The Census Bureau's Business Dynamics Statistics were used to contextualize broader business-performance outcomes, including firm births, firm deaths, establishment births, establishment deaths, and job creation and destruction (U.S. Census Bureau, 2024) ^[9].

Digital Economy Accounts

The BEA Digital Economy Satellite Account was used to characterize the broader economic significance of digital technologies. The latest published estimates indicate that the U.S. digital economy accounted for approximately \$2.6 trillion, or 10.0% of GDP, in 2022 and supported approximately 8.9 million jobs (U.S. Bureau of Economic Analysis [BEA], 2023) ^[5]. Because the BEA's Digital Economy Satellite Account was discontinued after the 2022 estimates, it is not used to construct a continuous 2018–2026 series.

Literature Search Strategy

The study combined secondary-data analysis with a structured review of literature on AI adoption, Business Analytics, digital transformation, organizational capabilities, productivity, and business performance. Relevant literature was identified through searches of academic databases and official U.S. government statistical repositories. Priority was given to peer-reviewed studies, U.S. government reports, methodological papers, and nationally representative datasets.

The literature search focused on five principal themes:

1. AI and advanced-technology adoption;
2. Business Analytics and data-driven decision-making;
3. organizational transformation and dynamic capabilities;
4. productivity and business performance; and
5. workforce and employment implications of AI.

Inclusion and Exclusion Criteria

Studies were included when they:

- examined AI, Business Analytics, advanced technologies, or digital transformation;
- focused on firms, industries, workers, or the U.S. economy;
- provided empirical evidence or theoretically relevant analysis;
- used credible primary or secondary data; and
- contributed to understanding technology adoption, organizational transformation, or business performance.

Studies were excluded when they lacked empirical relevance, used unverifiable data, duplicated evidence from another source, or focused exclusively on technical AI development without implications for business analytics, organizations, or decision-making.

Results and Discussion

Evolution of AI and Advanced-Technology Adoption

Table 1 provides evidence of a pronounced evolution in the adoption of artificial intelligence (AI) and related digital technologies among U.S. businesses between the early digital-technology period and the contemporary AI diffusion period. The findings are particularly important because they demonstrate that the current expansion of AI did not emerge suddenly with the generative-AI boom. Rather, contemporary AI diffusion appears to have developed from an earlier technological foundation characterized by increasing use of cloud computing and other advanced digital technologies.

In the 2018 reference year, approximately 3.0% of U.S. firms reported using AI, according to the Annual Business Survey (ABS). Although this proportion was relatively small, it establishes a measurable pre-generative-AI baseline and confirms that AI was already present within the U.S. business environment before the rapid commercialization of generative AI. More importantly, AI adoption occurred within a broader process of digitalization. In the same year, 32.4% of firms reported using cloud-based technologies, indicating that the technological infrastructure supporting data storage, processing, connectivity, and digital business operations was substantially more widespread than AI itself. The large difference between cloud adoption and AI adoption in 2018 is analytically significant. It suggests that the early stages of digital transformation were characterized more by the establishment of foundational digital infrastructure than by widespread deployment of advanced AI applications. Cloud computing and related technologies can be interpreted as enabling resources that subsequently facilitate data-intensive analytics and AI applications. In terms of the conceptual framework of this study, the 2018 evidence therefore corresponds primarily to the technology adoption and data-infrastructure stages of the technology-to-performance pathway. AI was present, but its penetration remained limited relative to the broader digital technology ecosystem.

The subsequent BTOS evidence indicates a substantial acceleration in reported AI use. By September 2023, approximately 3.7% of businesses reported current AI use. This increased to approximately 5.4% in the early months of 2024 and reached approximately 9.5% by May 2025. Thus, within the contemporary BTOS period, reported AI use increased by roughly 5.8 percentage points between September 2023 and May 2025, representing more than a twofold increase relative to the September 2023 level. The acceleration becomes particularly pronounced toward the end of 2025 and into 2026. BTOS estimates indicate that AI use rose into the 17–20% range between December 2025 and May 2026, reaching 19.8% in the survey period ending May

3, 2026. Relative to the approximately 3.7% recorded in September 2023, the May 2026 estimate represents an increase of approximately 16.1 percentage points, or more than a fivefold increase in the reported prevalence of AI use. This pattern indicates that AI moved from a relatively specialized technology to a substantially more common component of U.S. business activity within a comparatively short period.

However, the magnitude of this increase should be interpreted carefully. The observed growth should not be treated as a perfectly continuous measure of the underlying rate of AI diffusion, because the BTOS measurement instrument was revised in November 2025. Earlier questions focused on AI use in producing goods or services, whereas the revised question broadened the measurement to AI use in any business function. The expansion in the measured scope of AI use may therefore account for part of the increase observed around the measurement break. Consequently, the results support two related but distinct conclusions. First, there is strong evidence of genuine expansion in AI adoption during the contemporary period. Second, the precise magnitude of the increase across the November 2025 measurement break cannot be interpreted entirely as technological diffusion because changes in survey definition may also contribute to the observed increase. This distinction is essential for avoiding overstatement of the rate at which AI has penetrated the U.S. business sector.

The transition from approximately 3.0% AI adoption in the 2018 ABS to 19.8% current AI use in May 2026 also illustrates the changing position of AI within the broader digital transformation process. In 2018, AI represented a relatively limited component of an already expanding digital ecosystem, whereas by 2026 AI had become substantially more embedded in business activity. The findings are therefore consistent with a progression from digital infrastructure development toward advanced analytics and increasingly AI-enabled business processes. This evolution also supports the theoretical propositions underlying the study. From an RBV perspective, the relatively widespread adoption of cloud technology in 2018 compared with AI suggests that firms first developed foundational technological resources upon which more sophisticated analytical capabilities could subsequently be built. The subsequent growth in AI adoption is consistent with the proposition that competitive value increasingly depends not only on acquiring technology but also on developing complementary data, analytical, human-capital, and organizational capabilities.

From a Dynamic Capabilities perspective, the results suggest an ongoing process of technological adaptation and organizational reconfiguration. The rapid increase in AI use after 2023 indicates that firms increasingly recognized and responded to emerging opportunities associated with AI. However, adoption should not be equated automatically with successful transformation. The transition from merely using AI to integrating it into business functions requires complementary organizational capabilities, workforce skills, data infrastructure, and managerial readiness.

Table 1. Selected Evidence on AI and Digital Technology Adoption in U.S. Businesses

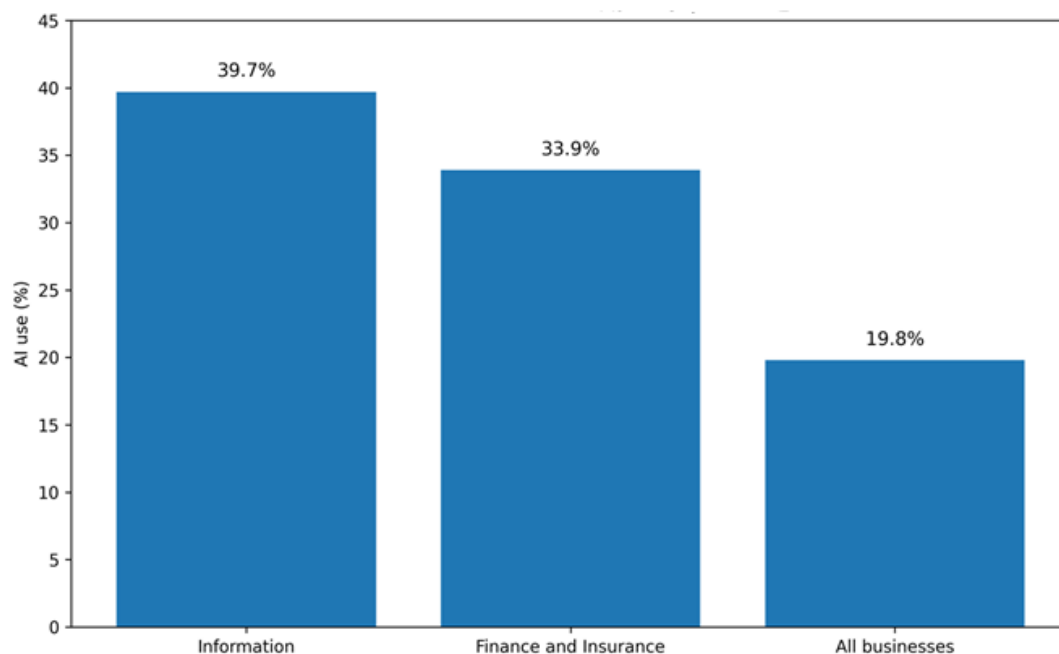
Period	Data source	Indicator	Evidence
2018 reference year	ABS	Firms using AI	3.0%
2018 reference year	ABS	Firms using cloud-based technology	32.4%
Sept. 2023	BTOS	Current AI use	≈3.7%
Early 2024	BTOS	Current AI use	≈5.4%
May 2025	BTOS	Current AI use	≈9.5%
Dec. 2025–May 2026	BTOS	Current AI use	17–20%
May 3, 2026	BTOS	Current AI use	19.8%

Source: U.S. Census Bureau (2019, 2024, 2025, 2026).

Industry Differences in AI Adoption

Figure 1 reveals substantial heterogeneity in artificial intelligence (AI) adoption across U.S. industries as of May 3, 2026. AI use was particularly pronounced in the *Information* sector, where 39.7% of businesses reported using AI, followed by *Finance and Insurance*, with an adoption rate of 33.9%. Both rates were considerably higher than the 19.8% national average, indicating that AI diffusion is occurring unevenly across the U.S. business sector. The Information sector recorded an AI adoption rate that was 19.9 percentage points above the national average, representing

approximately twice the overall business adoption rate. Finance and Insurance similarly exceeded the national average by 14.1 percentage points, with an adoption rate approximately 1.7 times the national level. The magnitude of these differences demonstrates that industry structure is an important dimension of the contemporary AI diffusion process. Rather than spreading uniformly across businesses, AI adoption appears to be more advanced in sectors characterized by intensive information processing and established digital capabilities.



Source: U.S. Census Bureau (2026), Business Trends and Outlook Survey (BTOS), May 3, 2026.

Fig 1: Industry Differences in Artificial Intelligence Adoption among U.S. Businesses, May 2026

The particularly high adoption observed in the Information sector is consistent with the technological characteristics of information-intensive economic activities. Businesses in this sector operate extensively with digital information, software, data systems, computational technologies, and other forms of digital infrastructure. These characteristics provide a favorable foundation for the deployment of advanced analytics and AI applications. The finding therefore reinforces the conceptual pathway underpinning this study, whereby digital and advanced-technology adoption creates an infrastructure base from which Business Analytics capability and subsequent AI integration can develop. The relatively high adoption rate in Finance and Insurance provides further evidence of this pattern. Financial and insurance activities depend heavily on information processing, quantitative analysis, prediction, risk assessment,

digital transactions, and data-driven decision support. These characteristics are compatible with applications of AI that can enhance analytical processing and automate or augment selected business activities. However, the data presented in Figure 1 do not identify the specific factors responsible for the higher adoption rates in these industries. Consequently, the observed sectoral differences should be interpreted as empirical patterns rather than as evidence that particular industry characteristics independently cause higher AI adoption.

The comparison with the national rate is also important because an aggregate adoption statistic can conceal substantial differences in technological development across sectors. The national estimate of 19.8% represents businesses operating under diverse technological, organizational, and competitive conditions. The substantially higher rates

observed in Information and Finance and Insurance indicate that some sectors have progressed considerably further along the AI adoption pathway than the business population as a whole. This suggests that the contemporary U.S. AI transition is characterized simultaneously by rapid diffusion and significant sectoral concentration.

The findings have important implications for the Resource-Based View (RBV) that underpins the study. According to the RBV, technology creates economic value when combined with complementary resources and capabilities. The relatively high adoption rates in Information and Finance and Insurance may therefore reflect differences in the availability of complementary assets, including digital infrastructure, data resources, analytical expertise, specialized human capital, and managerial capabilities. The results reinforce the proposition that the strategic significance of AI extends beyond access to the technology itself to include the organizational resources required for its effective deployment.

The results are also consistent with Dynamic Capabilities Theory, which emphasizes firms' ability to sense technological opportunities, seize those opportunities through investment and implementation, and transform organizational resources and routines. The relatively high adoption rates observed in the Information and Finance and Insurance sectors suggest that firms in these environments may have stronger incentives or greater capacity to incorporate emerging AI technologies into existing digital and analytical systems. Nevertheless, the present analysis does not directly measure firms' sensing, seizing, or transformation capabilities; hence, this theoretical interpretation should not be regarded as a direct empirical test of the theory.

Industry differences in AI adoption may also have implications for organizational transformation and business performance. Greater adoption creates more opportunities for AI to be incorporated into business functions, reshape workflows, augment employees, automate selected tasks, and strengthen data-informed decision-making. If these applications are implemented effectively, industries with higher adoption may potentially experience earlier or more substantial gains in analytical capacity, operational efficiency, and productivity. However, the present figure does not establish such performance effects. Adoption of AI should not be equated with successful implementation, improved decision quality, or increased productivity.

An additional implication concerns the potential for unequal technological transformation across industries. Where AI adoption is concentrated in industries with relatively strong digital infrastructure and analytical capabilities, differences in technological readiness may become an important source of divergence in organizational capability. Industries with lower adoption may face greater challenges in developing the infrastructure, workforce skills, data capabilities, and organizational readiness required to integrate AI effectively. The current evidence, however, does not provide sufficient information to determine the specific barriers faced by lower-adoption industries.

Figure 1 therefore provides evidence that industry context is closely associated with the prevalence of AI use among U.S. businesses. The Information sector's 39.7% adoption rate and Finance and Insurance's 33.9% rate substantially exceeded

the 19.8% national average. These findings suggest that AI diffusion is particularly advanced in sectors with strong information-processing and digital foundations and support the study's broader conceptual argument that AI adoption forms part of a progression from technological infrastructure to Business Analytics capability, functional AI integration, organizational transformation, and AI-augmented decision-making.

Firm Size and AI Adoption

Figure 2 demonstrates a clear positive association between firm size and artificial intelligence (AI) adoption among U.S. businesses. For the period ending May 3, 2026, approximately 37% of firms with 250 or more employees reported using AI, compared with 32% of firms with 100–249 employees and less than 20% of firms with four or fewer employees. The difference between the two larger-firm categories was relatively modest (approximately 5 percentage points), whereas the gap between firms with 100–249 employees and the smallest firms was substantially wider. Even using 20% as the upper bound for the smallest-firm category, adoption among firms with 100–249 employees was at least 12 percentage points higher. Thus, the most pronounced size-related divide occurred between relatively large firms and the smallest businesses.

This pattern is consistent with the study's broader argument that AI adoption depends on complementary technological and organizational resources. Larger firms may have greater capacity to invest in digital infrastructure, data systems, specialized software, analytical expertise, employee training, and technological experimentation. However, these mechanisms are interpretive rather than directly tested by the figure; the BTOS data establish the size differential in adoption but do not explain its underlying causes. The finding also reinforces the study's Business Analytics capability pathway, whereby established data infrastructure, cloud systems, specialized software, and analytical expertise can facilitate the transition from digitalization to AI integration. From the Resource-Based View (RBV), differences in adoption may therefore reflect disparities in complementary resources and organizational capabilities required to deploy AI effectively (Barney, 1991) ^[1]. Similarly, Dynamic Capabilities Theory suggests that successful AI adoption requires firms to identify technological opportunities, allocate resources, integrate new technologies, and adapt organizational routines (Teece *et al.*, 1997) ^[4]. Nevertheless, the present analysis does not directly test either theoretical framework.

The size differential may have implications for the distribution of productivity and competitive benefits associated with AI. Faster adoption among larger firms could enable earlier gains from analytical capacity, process efficiency, automation, and AI-supported decision-making, potentially reinforcing differences in technological capability across firms. Conversely, increasingly accessible cloud services and commercially available generative-AI tools may reduce adoption barriers for smaller businesses over time.

Therefore, the smallest-firm category is reported as “less than 20%,” rather than an exact percentage. Consequently, comparisons involving this category should be interpreted as demonstrating a substantial adoption gap without implying false numerical precision.

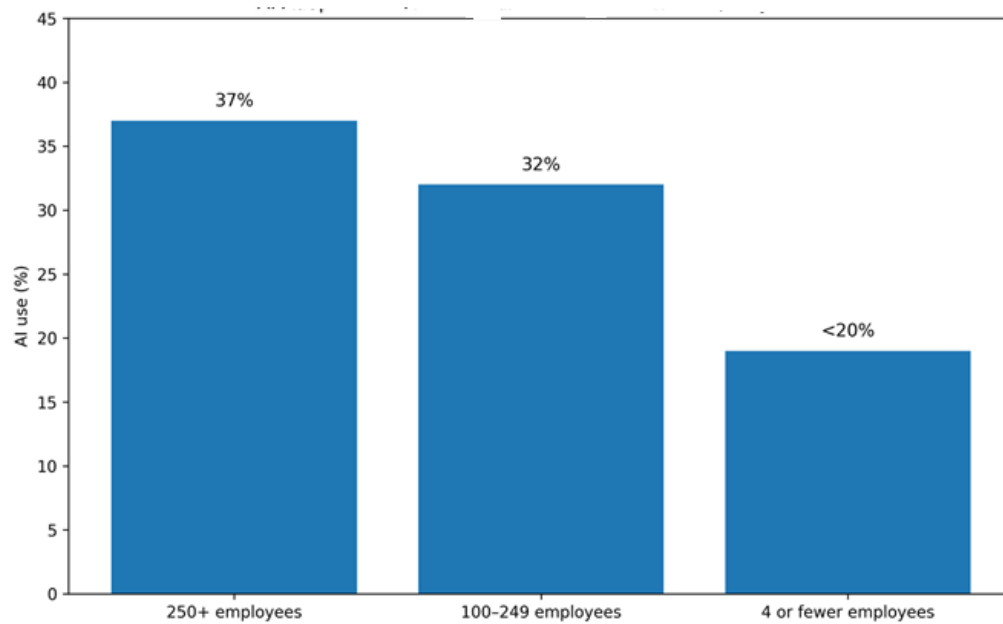


Fig 2: Artificial Intelligence Adoption by Firm Size among U.S. Businesses, May 2026 Source: U.S. Census Bureau (2026), Business Trends and Outlook Survey (BTOS), data collection period ending May 3, 2026.

Business Functions and AI Integration

Table 2 indicates that AI adoption among U.S. businesses is increasingly progressing from general technological use toward integration within specific business functions. Among AI-using businesses during November 2025–January 2026, Sales and Marketing recorded the highest application rate (52%), followed by Strategy and Business Development (45%) and Information Technology (41%). The prominence of Sales and Marketing suggests that commercially oriented activities represent an important domain for AI integration, particularly in information processing, customer analysis, marketing, and other data-intensive processes. The 45% application rate in Strategy and Business Development further indicates that AI use extends beyond routine operations to organizational planning and strategic development. Similarly, the 41% application rate in Information Technology demonstrates the continued importance of AI within organizations' technological infrastructure. The relatively close rates across the three functions suggest that AI applications are becoming distributed across multiple dimensions of business activity rather than concentrated in a single functional area.

These findings support the study's conceptual transition from AI adoption to functional AI integration, emphasizing that the

significance of AI depends not simply on whether firms adopt the technology but on how extensively it is embedded within organizational processes. Functional integration may facilitate workflow redesign, task augmentation or automation, organizational transformation, and AI-supported decision-making. From the Resource-Based View, these patterns underscore the importance of complementary technological, analytical, and organizational resources in translating AI adoption into usable capabilities (Barney, 1991) ^[1]. They are also consistent with Dynamic Capabilities Theory, which emphasizes firms' capacity to integrate new technologies and adapt organizational routines to changing environments (Teece *et al.*, 1997) ^[4].

Importantly, the percentages represent the share of AI-using businesses applying AI within each function, rather than the proportion of all U.S. businesses. Moreover, the descriptive data do not establish whether functional AI use improves productivity, profitability, or decision quality. Therefore, Table 2 demonstrates that AI is increasingly emerging as an integrated business capability spanning commercial, strategic, and technological functions, strengthening the study's argument that its economic significance depends on effective integration with Business Analytics, organizational processes, human capital, and managerial decision-making.

Table 2. Selected Business Functions Using AI

Business function	Share of AI-using firms (%)
Sales and Marketing	52
Strategy and Business Development	45
Information Technology	41

Source: U.S. Census Bureau (2026).

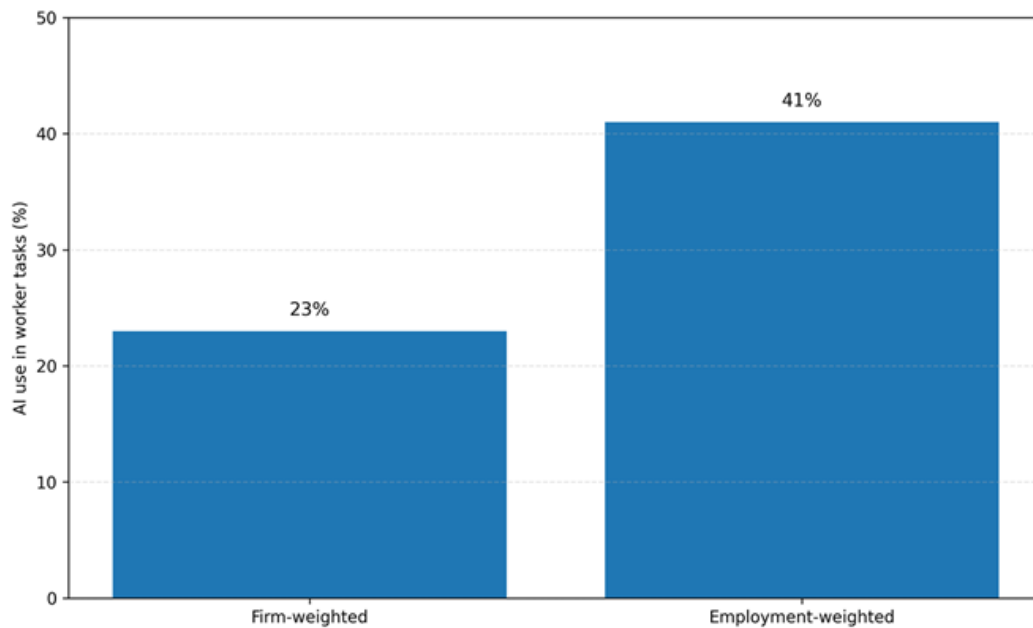
AI, Workers, and Organizational Transformation

Figure 3 shows a substantial difference between firm-weighted AI use in worker tasks (23%) and employment-weighted AI use (41%) during November 2025–January 2026. The higher employment-weighted estimate indicates that AI-related changes in work were disproportionately concentrated among larger firms, where a relatively smaller

number of businesses accounted for a much larger share of affected workers. This finding suggests that the organizational implications of AI extend beyond the proportion of firms adopting the technology, with potential effects on a considerably larger segment of the workforce. The figure supports the view that AI adoption is increasingly associated with task augmentation, workflow restructuring,

and broader organizational transformation, while the aggregate measures alone cannot establish whether these

changes ultimately result in employment gains or displacement.



Source: U.S. Census Bureau (2026), Business Trends and Outlook Survey (BTOS), November 2025–January 2026.

Fig 3: AI Use in Worker Tasks among U.S. Businesses: Firm-Weighted and Employment-Weighted Measures, November 2025–January 2026

AI Adoption and Productivity

Table 3 indicates that U.S. private nonfarm business productivity improved in both 2024 and 2025, although the pace of improvement moderated across both productivity measures. Total factor productivity growth declined from 1.5% in 2024 to 0.8% in 2025, while labor productivity growth decreased from 3.0% to 2.2%. Over the same period, output growth moderated slightly from 3.0% to 2.6%,

whereas combined input growth increased from 1.4% to 1.7%. These patterns indicate continued productivity gains alongside stronger input growth, but they do not establish a causal effect of AI adoption on productivity. Rather, the results provide an important macroeconomic context for assessing whether the rapid diffusion of AI is occurring alongside broader improvements in business productivity.

Table 3. Selected U.S. Private Nonfarm Business Productivity Indicators

Indicator	2024	2025
Total factor productivity	1.5%	0.8%
Labor productivity	3.0%	2.2%
Output	3.0%	2.6%
Combined inputs	1.4%	1.7%

Source: U.S. Bureau of Labor Statistics (2026).

The Digital Economy as a Foundation for AI

Table 4 highlights the substantial scale of the U.S. digital economy as the foundational infrastructure for AI-enabled business transformation. In 2022, the digital economy generated approximately \$2.6 trillion in value added, equivalent to 10.0% of U.S. GDP, and supported 8.9 million jobs, with associated compensation of about \$1.3 trillion (BEA, 2023). These figures demonstrate that AI diffusion is

occurring within an already substantial digital ecosystem characterized by significant economic output, employment, and investment in digital capabilities. The scale of this digital foundation provides an important context for understanding the subsequent expansion of business analytics and AI adoption, while also underscoring that AI represents an evolution of broader digital transformation rather than an isolated technological development.

Table 4. U.S. Digital Economy, 2022

Indicator	2022
Digital economy value added	\$2.6 trillion
Share of GDP	10.0%
Employment	8.9 million jobs
Compensation	\$1.3 trillion

Source: Bureau of Economic Analysis (2023).

Conclusion and Recommendations

This study examined the evolution of Business Analytics and artificial intelligence (AI) adoption among U.S. businesses from 2018 to 2026 using evidence from major federal statistical sources. The findings demonstrate a transition from foundational digitalization toward increasingly widespread AI-enabled business transformation. AI adoption increased from approximately 3.0% of firms in 2018 to 19.8% by May 2026, although changes in BTOS measurement after November 2025 require caution when interpreting the magnitude of this increase. The substantially higher prevalence of cloud-based technology in 2018 further indicates that digital infrastructure preceded and provided an important foundation for subsequent AI diffusion. AI adoption was also strongly differentiated by industry and firm size, with particularly high adoption in Information and Finance and Insurance and substantially higher adoption among larger firms. AI-using businesses increasingly applied the technology across Sales and Marketing, Strategy and Business Development, and Information Technology, demonstrating a movement from general adoption toward functional integration. These patterns suggest that the value of AI depends not simply on acquiring the technology, but on the availability of complementary digital infrastructure, analytical capabilities, human capital, and organizational resources.

The workforce evidence further indicates that AI-related transformation extends beyond the number of adopting firms. Employment-weighted AI use in worker tasks was substantially higher than firm-weighted adoption, highlighting the potentially broader workforce implications of AI integration. At the same time, productivity increased in both 2024 and 2025, but the aggregate evidence does not establish that AI caused these productivity gains. AI adoption should therefore be understood as part of a broader process of technological, organizational, and workforce transformation rather than as an independent determinant of business performance.

These findings have important managerial and policy implications. Businesses should strengthen digital infrastructure, data governance, Business Analytics capabilities, and workforce skills before and alongside AI implementation. Particular attention should be given to small firms, which exhibit substantially lower adoption rates and may require targeted access to affordable digital technologies, technical assistance, training, and financing. Organizations should also prioritize employee reskilling, task redesign, and human–AI complementarity to ensure that technological adoption supports productive organizational transformation while addressing potential displacement risks. At the policy and research levels, U.S. statistical agencies should maintain greater consistency in AI definitions and survey instruments to improve longitudinal measurement and comparability. Future research should also develop firm-level longitudinal datasets linking AI adoption with productivity, employment, innovation, profitability, and decision quality. Such evidence would help distinguish correlation from causation and identify the organizational and technological conditions under which AI generates measurable business value. Overall, the study concludes that

the transition from digital transformation to AI-enabled decisions is most likely to generate sustainable performance benefits when AI is integrated with Business Analytics, complementary resources, capable workforces, and adaptive organizational processes.

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