Research on Comparative Analysis of ChatGPT and DeepSeek in Business Administration and AI Development Strategies

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Abstract: As large language models (LLMs) continue to evolve, their role in business administration is expanding, offering enhanced tools for automation, analysis, and communication. This paper presents a comparative study of two prominent LLMs: ChatGPT, created by the U.S.-based company OpenAI, and DeepSeek, a Chinese-developed open-source model. Relying on literature reviews, technical reports, and real-world use cases, the research examines their development paths, functional capabilities, implementation scenarios, and technical constraints. In addition, the study explores the broader AI development strategies in the United States and China by analyzing national policy directions, funding mechanisms, and institutional practices (Normile, 2025; OpenAI, 2023). In addition, the study explores the broader AI development strategies in the United States and China by analyzing national policy directions, funding mechanisms, and institutional practices (Normile, 2025; OpenAI, 2023). The comparison highlights notable differences in effectiveness, transparency, and customization potential between the two models, providing practical insights for businesses navigating AI selection under diverse regulatory and global conditions.

Introduction

Recent progress in large language models (LLMs) has introduced new opportunities for improving business operations, particularly in areas such as automation, communication, and strategic analysis. Among the most notable examples are ChatGPT—launched in 2022 by the U.S.-based firm OpenAI—and DeepSeek, released in 2025 by a Chinese startup bearing the same name. While ChatGPT quickly gained worldwide traction for its performance and user experience (OpenAI, 2023), DeepSeek drew attention for delivering similar capabilities through an open-source model at significantly lower development costs (Normile, 2025).

These two systems embody contrasting development philosophies shaped by their national

ecosystems. ChatGPT is a closed, commercial product developed with substantial private sector investment and integrated with global cloud infrastructure. DeepSeek, in contrast, adopts a publicly accessible architecture and aligns closely with domestic regulatory requirements in China.

This research offers a comparative evaluation of ChatGPT and DeepSeek from a business administration standpoint. Key areas of investigation include each model's technical attributes, adaptability, enterprise-level usability, and efficiency in terms of cost and deployment. To enhance this analysis, the study also examines the broader strategic landscape of AI innovation in both the United States and China—focusing on government policy, investment flows, and institutional governance.

The methodology centers on qualitative synthesis of scholarly research, industry documentation, and real-world use cases. This study seeks to offer practical understanding of how ChatGPT and DeepSeek diverge in use-case suitability, technical priorities, and broader strategic context—helping organizations assess which model aligns best with their operational needs and external constraints.

1. Literature Review

1.1 ChatGPT: Development, Features, and Business Applications

ChatGPT, a product developed by OpenAI and launched in late 2022, is built upon the GPT-3.5 and GPT-4 language architectures. Following its release, it rapidly gained popularity and became the fastest-growing consumer AI product in history, attracting over 100 million users within its first two months (Hu, 2023; OpenAI, 2023). The model was trained on extensive textual datasets and further enhanced through reinforcement learning based on human feedback, resulting in strong performance across language-related tasks such as comprehension, content creation, translation, and code generation.

A key attribute of ChatGPT is its versatility across diverse business functions. It has been adopted in enterprise contexts for customer engagement, automated report writing, internal communication, and software development assistance. Integration with Microsoft's ecosystem, including Azure and Office products, along with availability via APIs and ChatGPT Enterprise, has contributed to its corporate usability (Kaput, 2024). For example, BBVA, a multinational bank, incorporated ChatGPT across multiple departments and reported measurable productivity improvements.

Despite its capabilities, several constraints limit ChatGPT's application flexibility. As a proprietary system, it does not permit direct access to model weights or internal customization. Companies seeking domain-specific fine-tuning must rely on prompt engineering or controlled customization options provided by OpenAI. Another operational challenge lies in the pricing model—services built on GPT-4 often involve considerable usage fees or licensing expenses, which can become difficult to manage for organizations scaling their deployments.

Technical and ethical concerns further complicate its usage. The model's computational requirements necessitate high-performance cloud infrastructure. Its responses, while coherent, are not always factually accurate and may include fabricated or misleading content, commonly referred to as "hallucinations" (Shankar, 2023). Moreover, data privacy remains a key issue, particularly regarding sensitive inputs transmitted through external platforms. Nevertheless, ChatGPT continues to be widely used in enterprise environments, with ongoing improvements aimed at increasing safety, factuality, and compliance.

1.2 DeepSeek: Development, Features, and Business Applications

DeepSeek is a Chinese-developed language model introduced by a domestic startup of the same

name in 2023. By 2025, the company had released several iterations, including the notably efficient DeepSeek-V3. This version attracted attention for delivering near state-of-the-art performance at a significantly reduced training cost compared to Western counterparts like GPT-4 (Normile, 2025). Unlike proprietary models, DeepSeek adopts an open-access structure, offering full transparency of its architecture and model weights. This openness enables companies to host, modify, and adapt the system on their own computing infrastructure.

From a technical perspective, DeepSeek-V3 employs a Mixture-of-Experts (MoE) architecture, where only selected expert networks are activated per input. This approach conserves computational resources while maintaining performance. Reports indicate that DeepSeek's total training cost remained under $6 million, a fraction of what was required for similar models developed in the U.S. (Science & Tech Daily, 2024). Additionally, its relatively lightweight inference design allows deployment on mid-range GPUs, appealing to organizations operating with constrained resources.

The open-source nature of DeepSeek supports greater adaptability. Enterprises are able to fine-tune the model using proprietary or domain-specific datasets without relying on external service providers. This approach enhances data control and regulatory compliance—especially within China, where platforms like ChatGPT are inaccessible. DeepSeek is also particularly well-suited to Chinese language tasks, having outperformed many global models on benchmarks such as SuperCLUE. While it supports multiple languages, its strengths clearly lie in handling Chinese content and cultural context.

Nevertheless, DeepSeek presents trade-offs. Since it is self-hosted, responsibility for infrastructure management, updates, and safety filters falls on the user. Moreover, its alignment with Chinese information policies means it avoids certain topics, potentially limiting global applicability. While DeepSeek performs strongly in several areas, evaluations suggest that it still lags behind leading Western systems in handling advanced inference tasks and English-focused domains.

In sum, DeepSeek offers a practical, cost-efficient alternative for enterprises seeking open, customizable AI tools—particularly those focused on Chinese-language markets or operating under domestic regulatory frameworks (Young, 2025).

1.3 AI Development Strategies in China and the United States

The distinct paths taken by the United States and China in artificial intelligence (AI) development have directly shaped models like ChatGPT and DeepSeek. In the U.S., a market-driven system encourages innovation through private enterprise, academic research, and robust venture capital investment. Major U.S. technology firms—including OpenAI, Google, Microsoft, and Meta—have been instrumental in pushing the boundaries of large language model development, frequently investing in experimental and high-cost initiatives. Federal initiatives, including the American AI Initiative (2019) and the Executive Order on AI Safety (2023), reflect a growing awareness of AI's strategic value and the need to balance growth with oversight (Brookings, 2025). Legislative efforts like the CHIPS and Science Act (2022) channel public funds toward domestic chip manufacturing and AI R&D, aiming to secure long-term technological advantage. Export restrictions on advanced GPUs—particularly the NVIDIA A100 and H100—were enacted to prevent rivals, notably China, from accessing key training infrastructure (ITIF, 2024).

The American AI landscape remains largely under private sector control. From 2014 to 2024, U.S. companies reportedly attracted over $600 billion in AI-related investment—nearly seven times China's total during the same period (Omaar, 2024). Cloud providers such as Microsoft have accelerated enterprise adoption by embedding AI tools into widely used platforms. However, the absence of unified federal regulation raises unresolved issues around fairness, transparency, and data protection. Nonetheless, the U.S. retains its leadership through superior capital, talent

concentration, and computing power. ChatGPT illustrates this ecosystem—a closed, high-performance model supported by global infrastructure and capital.

In contrast, China has pursued a centrally coordinated approach to AI development. Initiated in 2017, China's New Generation AI Development Plan marked the beginning of a coordinated national strategy, bringing together government bodies, regional authorities, and private industry under a unified technological vision. Public funding, research subsidies, and partnerships between universities and firms have nurtured a fast-growing AI ecosystem. Local governments subsidize access to cloud resources and domestic chips, partially mitigating restrictions on foreign technology. This support system allowed emerging companies such as DeepSeek to develop competitive models under limited hardware conditions.

China's regulatory landscape is tightly linked to political priorities. Generative AI tools are required to comply with content control policies enforced by regulators like the Cyberspace Administration of China. Consequently, models are trained to avoid politically sensitive subjects. While this limits perceived transparency abroad, it ensures compliance within the domestic market. Tech giants such as Baidu, Alibaba, and Tencent also maintain LLM projects, while open-source players like DeepSeek reflect China's efforts to build independent AI capacity.

In short, the U.S. favors decentralized innovation led by private capital, whereas China relies on strategic alignment across state, academia, and industry. As a result of these contrasting national strategies, language models developed in the U.S. and China display notable differences in architectural design, platform openness, and alignment with local regulatory norms.

2. Methodology

This research applies a qualitative, document-based comparison to examine the characteristics and business relevance of ChatGPT and DeepSeek. The analysis draws on multiple types of publicly accessible materials—including scholarly articles, technical whitepapers, government policy documents, and corporate case examples—to explore the development trajectories, functional capabilities, and strategic positioning of the two models.

To support systematic evaluation, the study employed a comparative lens covering key categories such as technical design, scalability, customization potential, business integration, cost structure, and regulatory context. Beyond the technical evaluation, the study also reviewed the regulatory and strategic frameworks in the United States and China to understand how government priorities influence the rollout and application of AI technologies.

Source materials were selected from peer-reviewed publications, established think tanks, and credible news organizations. Benchmark data and adoption metrics were extracted from available evaluations, while practical implementations were illustrated through real-world examples—for instance, ChatGPT's integration at BBVA and DeepSeek's growth within Chinese tech ecosystems (Kaput, 2024; Normile, 2025).

The study also reviewed strategic-level documents such as the U.S. Executive Order on AI Safety and China's AI development blueprint to better understand each nation's role in shaping their respective models. This allowed for cross-perspective synthesis that incorporated technological, economic, and policy dimensions.

Rather than relying on quantitative metrics, this study emphasizes qualitative interpretation to illustrate how each model aligns with changing enterprise needs and policy-driven technological shifts. A limitation of this study is the reliance on secondary sources and the fast-changing nature of LLM technologies. Nonetheless, the method offers useful insight for stakeholders evaluating AI integration under varying operational and legal conditions.

3. Analysis and Discussion

This section outlines key differences between ChatGPT and DeepSeek by comparing their technical design, deployment strategies, adaptability, compliance considerations, and business integration. While both are advanced LLMs, their origins in distinct national systems have led to contrasting priorities and user experiences.

Development Background and Governance Models

ChatGPT was created by OpenAI in the U.S., heavily supported by venture capital and corporate partnerships—most notably with Microsoft. Its development follows a commercial model, with proprietary access and centralized updates via cloud services. DeepSeek, meanwhile, emerged from a Chinese startup supported by an innovation framework oriented around state goals. One notable feature is its publicly available architecture and model parameters, which provide organizations with customization rights and transparency, though they must take on technical responsibilities in return.

Technical Architecture and Cost Considerations

OpenAI's model benefits from high-end infrastructure, enabling advanced reasoning and natural English generation. It ranks near the top on multiple international benchmarks. DeepSeek, by contrast, focuses on resource efficiency. It employs a Mixture-of-Experts (MoE) structure, activating only part of the network for each task. This design helped keep training expenses to approximately \$5–6 million, a fraction of GPT-4's estimated cost (Normile, 2025). DeepSeek's design also allows deployment on more affordable hardware, which is advantageous for smaller organizations.

Adaptability for Business Use

For enterprise users, ChatGPT offers limited customization, primarily via prompt engineering or API controls. Fine-tuning is only available under specific terms. Because DeepSeek is open-source, enterprises can retrain it on proprietary data, which is particularly useful in sectors requiring tailored solutions or strict control over sensitive information. This flexibility is especially valuable for sectors like finance, law, or healthcare, where domain-specific knowledge is critical.

Compliance and Moderation Differences

Regulatory alignment is another point of divergence. ChatGPT is designed to follow Western standards for safety and ethical AI usage. However, it is not legally usable in China, where services from foreign AI providers are restricted. In contrast, DeepSeek was built with China's regulatory standards in mind, and incorporates internal safeguards to ensure compliance with national content guidelines. While this facilitates domestic deployment, it may limit adoption abroad due to transparency concerns.

Integration into Enterprise Ecosystems

ChatGPT benefits from integration into Microsoft's enterprise stack, including Azure, Teams, and other productivity tools. Its API and documentation are mature, making it easy to onboard within corporate workflows. DeepSeek requires more technical support and infrastructure setup, though it offers greater autonomy. For organizations with capable IT teams, DeepSeek provides control over updates, security, and fine-tuning not available with proprietary models.

Comparative Overview (Table Summary)

A side-by-side comparison highlights core differences: ChatGPT is a high-performing but closed tool with strong ecosystem support, while DeepSeek offers an open model emphasizing cost-effectiveness, Chinese-language fluency, and local compliance. Businesses must weigh factors such as licensing costs, customization requirements, and deployment environments when choosing between them.

Strategic Trade-Offs

Businesses must balance convenience and control. ChatGPT offers out-of-the-box performance and seamless cloud access, but involves dependence on external services and higher operating costs. DeepSeek appeals to those prioritizing autonomy, regulatory fit within China, or cost efficiency—though it requires more internal resources.

National Policy Reflections

These technical and operational differences mirror broader national strategies. The U.S. emphasizes market competition and innovation leadership, combined with selective technology export limits. China focuses on coordinated development, infrastructure independence, and regulatory integration. The rise of DeepSeek highlights that competitive models can emerge even in hardware-constrained environments, offering businesses a viable option beyond mainstream Western solutions.

Conclusion of Comparison

The optimal choice depends on context. ChatGPT may suit global enterprises needing rapid deployment and wide language support, while DeepSeek is well positioned for Chinese markets and specialized use cases. In many scenarios, using both tools in parallel may provide the best mix of flexibility, compliance, and performance.

4. Conclusion

Comparing ChatGPT and DeepSeek reveals how differing national approaches and innovation models result in AI systems with unique advantages and limitations. ChatGPT, shaped within a U.S.-centered innovation framework, offers refined performance, multilingual support, and ease of deployment. These features make it an appealing option for companies seeking ready-to-use AI services with minimal configuration. Nonetheless, being a proprietary system, ChatGPT restricts customization, depends on external service providers, and involves ongoing usage fees—issues that can be problematic for firms with limited budgets or strict data governance needs.

DeepSeek presents a different value proposition. DeepSeek's open-source design grants full accessibility, enabling companies to tailor the model for localized workflows and legal contexts, especially within the Chinese market. Its focus on resource efficiency and native-language precision aligns well with industries requiring specialized solutions or adherence to national policy. That said, adopting DeepSeek requires technical resources for hosting and ongoing maintenance, and its alignment with Chinese content standards may restrict certain international use cases.

Choosing between these two tools involves more than assessing raw performance. Variables such as jurisdictional constraints, infrastructure readiness, and desired autonomy should guide decision-making. A combined use of both models may offer strategic benefits, with ChatGPT addressing broad, routine functions and DeepSeek serving more specialized or regulation-sensitive operations.

More broadly, the differences between these models underscore a global shift: while Western systems lean toward commercialized, closed frameworks, Chinese alternatives reflect coordinated efforts to promote technological self-sufficiency and open development paths. As AI increasingly shapes enterprise planning, businesses must consider not only technical features, but also the underlying frameworks and guiding philosophies of each tool. Rather than competing extremes, ChatGPT and DeepSeek reflect a widening landscape of AI options—where flexibility and contextual relevance may take precedence over one-size-fits-all solutions.

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