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Agentic AI & Large Language Models for Enterprise Decision Intelligence and Business Process Automation

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Abstract
The use of agentic artificial intelligence and large language models is increasingly becoming a vital tool in decision-making within organizations and business process automation. The present study focuses on understanding how agentic artificial intelligence and language models would assist organizations in engaging in reasoning, knowledge retrieval, workflow management, and decision-making. Interpretivist philosophy and an inductive research design were utilized in this secondary research study using a qualitative research methodology. Thematic analysis was adopted to identify the technological capabilities, enterprise usage, advantages, implementation challenges, and governance requirements. Market reports indicate that enterprises have started adopting agentic AI agents rapidly in fields like customer service, operations, marketing, logistics, and strategy. The Salesforce market data indicates that average activated agents increased from five to thirteen between February 2025 and April 2026. The performance of Agentic Work Unit increased by 15 % compound growth every month during the time frame. In terms of access to AI solutions that have been authorized, according to Deloitte, 60 % of people have access to these solutions. Deep business transformation is achieved in only 34 % of the organizations. The research shows that Agentic AI performs at the highest level in terms of intelligent workflow execution, contextual reasoning, enterprise knowledge retrieval, and repetitive task automation. Nevertheless, there are significant weaknesses in the case of hallucinations, data integrity, cybersecurity, explainability, authorization, and governance. Mature governance is only present in one out of five firms in relation to autonomous AI agents.

Keywords: Agentic Artificial Intelligence, Large Language Models, Enterprise Decision Intelligence, Business Process Automation, Autonomous AI Agents, Workflow Automation, Knowledge Retrieval, Contextual Reasoning, Enterprise AI, Intelligent Decision-Making, AI Governance, Explainable AI, Cybersecurity, Organisational Transformation, Generative AI.

Introduction and Research Background

The decision intelligence of enterprises is increasingly becoming reliant on fast interpretation of complex data and business information. Large Language Models assist with performing contextual analysis of the enterprise's structured and unstructured data. Such models can perform analysis of reports, databases, documents, emails, and operational data very efficiently. Agentic AI brings additional capabilities to it, such as autonomous reasoning, planning, tooling, and tasking. Intelligent agents have the capability to coordinate multiple actions through enterprise application interconnection and organizational processes. They can collect information, perform evaluations, and provide recommendations considering the context of business knowledge. It becomes possible to implement automated decision processes in finance, operations, marketing, and supply chain management areas. The components of enterprise decision intelligence include predictive analytics, prescriptive analytics, and real-time business intelligence (Gan, 2026). Large Language Models improve capabilities through semantic understanding and communication using natural language. Accuracy of factual information is provided by Retrieval Augmented Generation because of the connection between enterprise knowledge bases and databases. Vector databases support semantic search in the collection of enterprise documents and information. The relationships of entities, processes, policies, transactions, and business events are described by knowledge graphs (Paulraj, 2025).

Such integration provides an opportunity to automate the workflow according to organizational policies and strategies. It is easier to automate business processes due to the ability of AI to handle the workflow adaptively. The agents can classify requests, generate responses, check information, and approve transactions. The agents can also monitor the results of the process and make adjustments if needed. This approach improves efficiency and decreases the need for intervention while improving consistency. The decision intelligence technology can constantly analyze the signals from the business and identify patterns (Chintala & Thiyagarajan, 2023). Such tools can perform scenario analysis and modeling and give recommendations.

It is important to ensure that the safeguards on data privacy maintain the privacy of the data during inference and when the agent executes its actions. Role-based access control can be utilized to restrict the permissions of the agent in corporate systems and data. The observability system would enable observation of the prompts, tools, decisions, errors, and outcomes of the workflow. This would lead to accountability in autonomous enterprise AI operations (Plathottam et al., 2023). A scalable architecture would make use of cloud computing infrastructure, API's, event streams, and microservices. This would help intelligent agents to operate in a distributed enterprise IT environment.

Literature Review

There is increasing interest shown by the emerging literature on the utilization of Agentic AI and LLMs as instruments of disruption within enterprise decision intelligence and business process automation. Furduescu (2025) highlights that the use of LLMs to enhance the processes of decision-making in organizations through the means of contextual understanding, semantic reasoning, information synthesis, and natural language interaction was also described in the literature. The researchers also claim that enterprise models perform better together with organizational databases, knowledge bases, workflows, and APIs. The concept of Retrieval Augmented Generation was mentioned by many authors as one of the major approaches to increase factual correctness and availability of enterprise knowledge. Vector databases and knowledge graphs were also identified as important instruments for the retrieval of relevant information from the organizational databases. Garg (2025) describes that agentic AI becomes a further step towards giving the agent autonomy in planning, reasoning, selecting tools, and performing a sequence of actions.

These characteristics are particularly useful in finance, customer service, supply chain management, human resources and decision-making processes. Literature has also found intelligent process automation as a technique for automating repetitive administrative processes and improving efficiency. On the contrary, literature has identified several concerns with regards to data privacy, model hallucination, explainability, security and governance. Autonomy may make inappropriate decisions based on inaccurate, outdated or misunderstood enterprise information. Thus, literature underscores the necessity of human supervision, access controls, monitoring and auditing of such processes. Integration is another issue extensively discussed in the research literature with regards to Agentic AI and LLMs. Haque et al., (2026) provides that integration is essential for interoperability among the cloud platform, enterprise application, database, API and workflow management system. Overall, literature has identified great potential for the integration of Agentic AI and LLMs. Nevertheless, further research is needed in terms of scalability architecture, decision quality, workflow reliability and enterprise governance.

Method

This study is going to adopt a qualitative secondary research approach that will examine Agentic AI and Large Language Models (Rasheed et al., 2024). This study is going to require the review of current academic literature, industry reports, technical papers, and enterprise cases. The research philosophy that is most appropriate for this study is that of interpretivism, considering that the objective of this study is to understand the implications of intelligent agents in business decision-making and business processes. The inductive research method is most appropriate since themes are built from the evidence that has been collected (Vears & Gillam, 2022). Evidence is collected using a systematic search of all relevant academic and technological databases. The literature collected is about large language models, autonomous agents, retrieval-augmented generation, decision intelligence, and business process automation. Analysis is then done in order to examine the key technologies, capabilities, deployment, impacts, and challenges that enterprises face in deploying enterprise AI technologies (Sony, Antony & Mc Dermott, 2023).

Results

Rapid Enterprise Adoption of Agentic AI for Decision Intelligence

The introduction of enterprise applications is shifting from experimental generative AI to self-reliant agent-based business applications. Deloitte's 2026 State of AI survey was carried out among more than 3,000 leading

global executives. The survey shows high organizational interest in advanced AI technology and autonomous system implementations. Moreover, market forecasts predict rapid agentic AI growth in the enterprise application market (Ratnayake, 2025).

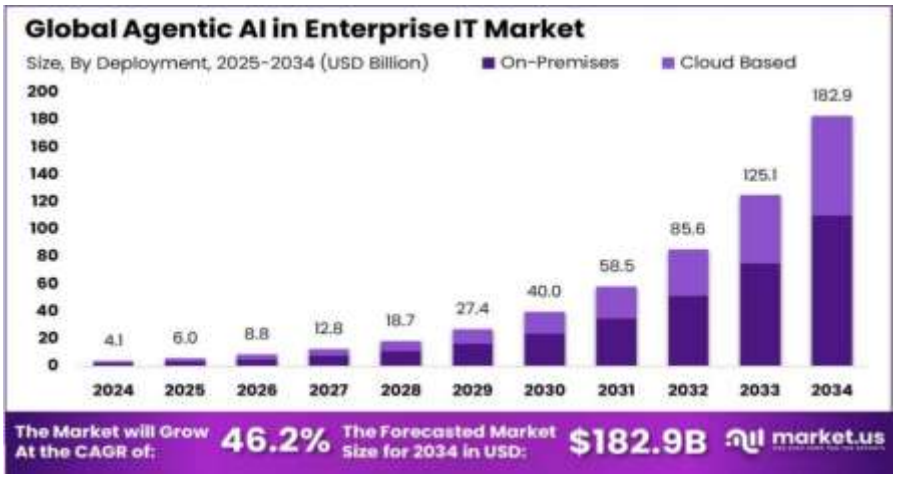

Figure 1: Agentic AI in Enterprise IT Market

(Source: Market.us., 2025)

One of the renowned forecasts by Gartner is about the implementation of task-specific agents in 40 % of enterprise applications by 2026. Salesforce serves as one example for demonstrating the above trends. According to the last quarterly report of the company, its Agentforce platform generates revenue of $1.5 billion in revenue. The agents are promoted by the company as interfaces in sales, service, marketing, and customer operations. According to the company's report of the company, the average number of AI agents utilized by companies now reaches twelve (Staufer et al., 2026). This number is supposed to increase rapidly within the next two years.

Large Language Models Enable Intelligent Knowledge-Driven Decision Support

LLMs have now become reasoning interfaces linking knowledge and information within an organization. The findings in enterprises that have been recently generated show that the use of LLMs in writing, technical activities, communication, and information synthesis is on the rise. In 2026, one study was performed on more than 17 million messages from 1,500+ firms using ChatGPT Enterprise (Cruz-Castro, Castelblanco & Antonenko, 2024).

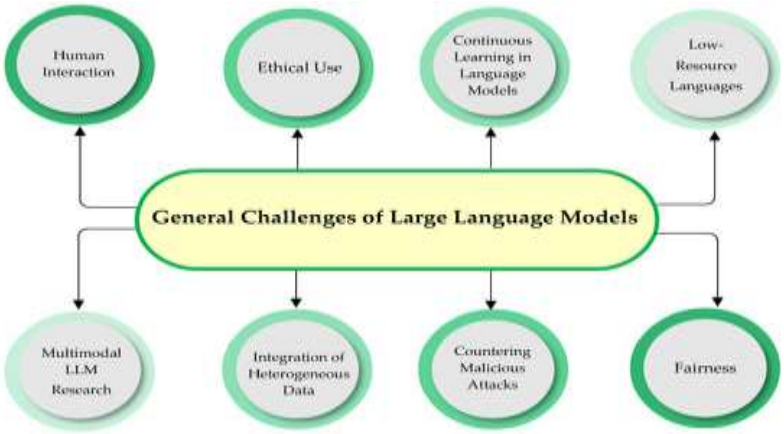

Figure 2: The technical challenges faced by LLMs.

(Source: Peykani et al., 2025)

It showed that the rise in the use of LLMs in enterprises was due to the adoption and usage intensity of the same. This means that the use of LLMs in enterprises is gaining popularity in fields other than conversational assistance. The use of LLMs with the help of enterprise databases, documents, APIs, and knowledge bases could be used for decision-making in enterprises. Retrieval-Augmented Generation would assist in improving the

answers in enterprises by grounding the model output in organizational information (Krishna et al., 2025). There has been some progress made in this regard by Microsoft with Copilot Studio and agent orchestration systems. The May 2026 update had an orchestration layer to improve the performance of agents in business processes.

Autonomous Agents Are Transforming Business Process Automation

The agentic AI is changing the process of business process automation since it combines reasoning with automatic workflow execution (Yakovenko & Shaptala, 2023). Commonly, automation works with preprogrammed instructions and needs structured input data. However, intelligent agents can interpret natural language instructions and perform corresponding actions dynamically.

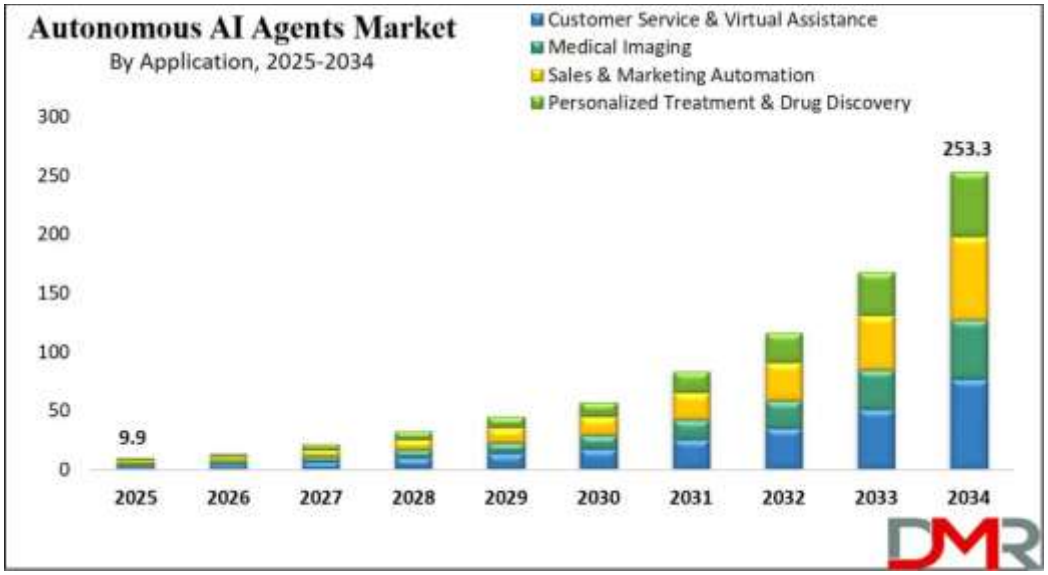

Figure 3: Autonomous AI Agents Market Datas

(Source: Dimension Market Research, 2025)

The progress that was made in 2026 by Microsoft in terms of development of Copilot Studio solutions is an example of the changes that modern automation solutions undergo as their development moves towards the creation of more flexible enterprise automation solutions. This progress is particularly targeted at the effective business process execution and management of agents. The company ServiceNow also notes the significance of agentic AI for transformation of enterprise workflows (Aroh, 2025). According to ServiceNow, autonomous agents can act inside various workflows and services of organizations. One more commercial example of agentic AI implementation is provided by Salesforce that has introduced Agentforce solution in customer service and business operations. Besides, Salesforce has also updated its system by integrating Anthropic to use Claude models within Salesforce sales, service, and marketing.

Multi-Agent Collaboration Strengthens Enterprise Workflow Orchestration

Enterprise AI has been shifting from using an assistant model to using a network of specialized agents (Thakur, 2026). In a 2026 research study on connectivity by Salesforce, enterprises have been found to use an average of twelve agents. The same research estimated substantial future growth of multi-agent implementation within the next two years. This is attributed to the complexities in the operations of an enterprise that require more than one specialized function. An agent can access organizational data, and another can conduct evaluation of the enterprise environment. Others can perform validation, customer interactions, regulatory verification, and transaction completion.

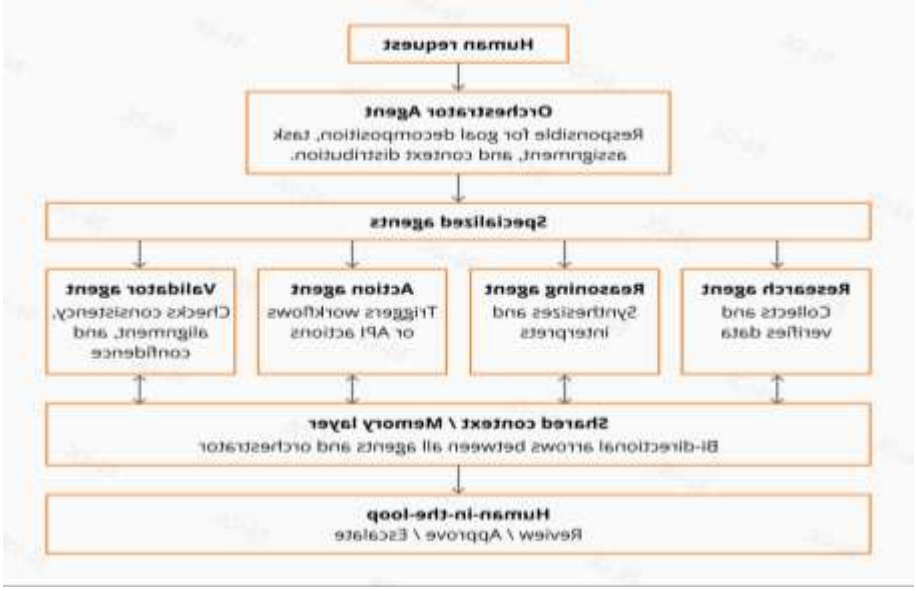

Figure 4: A multi-agent AI system

(Source: Mota, 2025)

Large language models assist in building the reasoning process involved in communicating between agents. Agent orchestration is therefore important in enterprise decision intelligence. The development of watsonx Orchestrate and agentic enterprise by IBM in its 2026 enterprise AI initiatives shows the trend. IBM used Aramco as an example of an enterprise in Think 2026 (Maslii, Cherviak & Onyshchenko, 2026). The multi-agent system assists in distributing complex decisions to different specialized computations. Coordinating the specialized computations involves identity management, permissions, observability, error handling, and human escalation.

Enterprise AI Investment Is Accelerating Through Cloud and Infrastructure Expansion

The rapid use of AI in enterprises is creating large investments in cloud computing infrastructure and capabilities. The revenue for Hewlett Packard Enterprise in Q3 2026 is estimated at $12.21 billion. The company has had an increase in revenue of revenues by 33.7 % from last year owing to high demand for AI infrastructure.

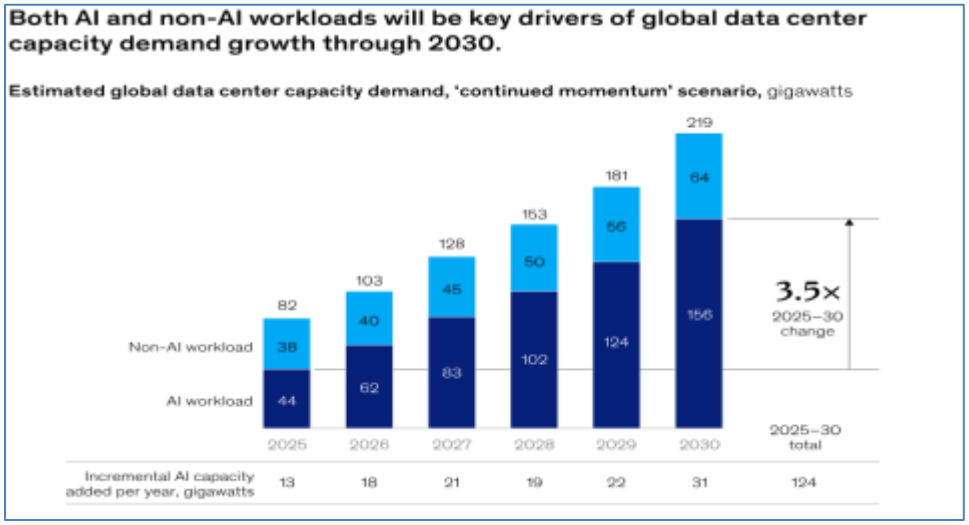

Figure 5: The cost of compute growth chart of AI workloads key drives

(Source: McKinsey & Company, 2025)

Also, HPE has had a lot of growth in networking and servers during the same time period. The above data shows that the use of AI in enterprises does not only involve the creation of AI models but also requires other infrastructure. The financial restructuring by Microsoft is yet another indication of the structural change in technology. Microsoft is creating a new reporting segment called "Agents and Infra". This segment comprises the following: Azure, Microsoft 365 Cloud, Servers, and other AI Infrastructure. The revenue for Azure in the most recent reporting by Microsoft is $29.4 billion per quarter.

Governance and Reliability Remain Major Barriers to Autonomous Enterprise AI

Adoption of enterprise AI is constrained by issues of governance, reliability, security, and business benefits. During its study of 2026, Deloitte observed growing organizational interest in agentic AI, but mentioned that maturity in governance is one of the primary challenges for implementation (Walhidayah & Surendro, 2025). Moreover, the latest cases of Salesforce show the gap between technology availability and enterprise-level implementation. As noted in a TD Cowen report, Salesforce partners had some challenges with respect to Agentforce implementation. Data readiness and platform maturity were identified as some of the primary barriers to the achievement of the desired outcomes. The implementation of autonomous agents is not only about the integration of LLMss into enterprise applications. Enterprises need data integration, permissions, auditability, model evaluation, and control (Yan et al., 2025). Agents thacan makeke autonomous transactions should have strict restrictions in terms of authorizations and monitoring. For this reason, Microsoft emphasized security and governance during the discussion of scalable agent adoption.

Discussion

From the results, it is evident how Agentic AI has made the application of enterprise artificial intelligence evolve from being supportive to becoming autonomous (Natarajan, 2025). As per Deloitte, AI applications that were lower than 40 % increased to approximately 60 %. However, less than 34 % of the enterprises have been transformed due to the application of AI. It is evident that just because there has been scaling up does not mean transformation. On the other hand, the figures provided by Salesforce offer operational figures, whereby the number of agents has risen from five to thirteen between February 2025 and April 2026. Moreover, there has been an increase in the output from the Agentic Work Unit of 15 % per month. The contemporary enterprise agents should not be viewed as full-fledged independent agents of decision-making (Verma, 2024). The true worth of such agents could be illustrated through process orchestration, knowledge management, context-based reasoning, and repeated tasks. However, the primary drawback relates to governance because only one out of five enterprises possesses advanced governance of autonomous agents. Thus, the worth of enterprise intelligence lies not in modeling but rather in data itself, its collection, integration, accessibility, and control by people.

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Author Contribution

The author conceptualized the study, conceived the research idea, conducted the literature review and analyzed the results collected from different sources in academia and industry. It was the author who developed the methodology of the research and analyzed the secondary data.

Conclusion

The current paper states that Agentic AI and LLMs affect the way how organizations build enterprise decision intelligence and automate their processes. The combination of these two technologies makes it possible to apply natural language reasoning to enterprise data, applications, and business processes. According to recent research, the number of agents is increasing, and there is a trend of the shift from testing the technology to using it in production. However, the paper reveals the peculiar gap between the adoption of new technologies and organizational changes. At the moment, enterprise applications have the most successful applications in structured workflow, information searching, customer services, operations support, and decision-making. The autonomy of the system demands correct data, proper access rights, proper integration, and human supervision. The main threat to autonomous systems comes from governance, as enterprise agents pose

security, compliance, accuracy, and accountability problems. Thus, future enterprise strategies should focus more on controlled autonomy than automation.

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