*Corresponding Author' Email: dhrupad.mathur@spjain.org
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Triggers of the Disruption Dynamics Maturity Model: Evaluating the role of Agentic AI as a pertinent Trigger impacting the Dimensions of Disruption

Dhrupad Mathur

Associate Professor-Technology Management, SP Jain School of Global Management, Dubai

Abstract

Agentic AI has fast emerged as a potent technology promising to transform the businesses pervasively. Business leaders globally are intrigued by this fast-paced development and there is a perceived need to evaluate its impact. Using an integrative literature review, this paper investigates whether Agentic AI could be the next prominent trigger impacting the eight dimensions of the DDM model. The Disruption Dynamics Maturity Model (DDMM) was conceptualized to diagnose the onset of business disruption and help envision possible interventions at strategic or tactical management levels. Building upon a high-level approach, DDMM is empirically applied to diverse business situations capturing emerging scenarios and future possibilities. The DDM Model does an empirical analysis across its eight dimensions which serve as the key factors impacting the Business Disruption, namely: Value elements, Formfactors, Entities, Operating Model, Consumption pattern, Interrelationships, Skill gap, and Regulation. Recently DDM model was applied to some emerging use cases in the regional business environment wherein it empirically demonstrated the extent of Business Disruption in the Construction and Manufacturing Sectors in the UAE. Further, it was envisaged that as more and more scenarios are evaluated using this model, it is likely to reveal various pertinent triggers or forces that cause changes in the dimensions of Disruption Dynamics and impact their maturity levels. This revelation will further aid in understanding the interplay between the eight dimensions and in the diagnosis and interventions towards addressing the complexities of Business Disruption at large. Mainly by analysing the latest applications, use cases, white papers and industry reports, this paper attempts to evaluate Agentic AI as a recognizable trigger for DDMM and hence a possible catalyst to imminent Business Disruption, thereby aiding the business leaders in detecting any early signals of business disruption.

Keywords: Disruption Trigger; Business Disruption; Agentic AI; Disruption Dynamics; Disruption Maturity Model

1. Introduction

Agentic AI has swiftly emerged as a powerful technological innovation with the capability to transform businesses extensively. This rapid advancement has has captured the attention of business leaders around the globe, highlighting an urgent need to assess its impact. Therefore, it is now imperative to examine if Agentic AI is a critical factor influencing the dimensions of the Disruption Dynamics Maturity Model, and consequently, to evaluate it as a potential catalyst for imminent business disruption. Conducting such evaluations would assist business leaders in identifying early indicators of business disruption, allowing them to respond proactively and strategically, eventuallty aiding the mangerial decision making.

The approach undertaken for this study is aimed at creating a unique and useful possibility wherein the impact of any one specific emerging technology on business disruption could be assessed using the Disruption Dynamics Maturity Model (DDMM) as a tool for rendering that effect visually. This promises to provide a substantial and benificial augmentation to the existing theories or models that are focussed on detecting or analysing business disruption.

Agentic AI, an emerging paradigm in the realm of artificial intelligence, refers to autonomous systems designed to pursue complex goals with minimal human intervention. Unlike traditional AI, which depends on structured instructions and close oversight, Agentic AI demonstrates adaptability, advanced decision-making capabilities and self-sufficiency, enabling it to operate dynamically in evolving environments. (Acharya, et.al. 2025)

Agentic systems are characterized by their proactive, goal-oriented nature and adaptive learning capabilities. These systems interact with their environment through APIs or digital tools, which allow them to access data, implement business logic, and adjust strategies in real time. They employ both 'proactive' and 'reactive' agents, utilizing large language models (LLMs) to execute various commands and analytical tasks. The intelligence of agentic systems lies in their internal thought processes, which are externally represented as a 'chain of thought' or 'tree of thought.' This framework facilitates problem-solving by ensuring the system remains focused on achieving set goals. (Kass-Hout, T. & Sheeran, D. 2024)

Agentic AI has fast emerged as a potent technology promising to transform the businesses pervasively. This study and the working paper investigate whether Agentic AI could be the next prominent trigger impacting the eight dimensions of the Disruption Dynamics Maturity Model.

Disruption Dynamics Maturity Model (DDMM) is an empirical tool for Business Disruption Diagnosis and Intervention. (Mathur, 2024). Given its empirical application across a diverse array of industry-specific scenarios, the Disruption Dynamics Maturity Model enables researchers and business managers to evaluate situations using the most current industry data as it becomes available. Consequently, in addition to considering published academic papers, it is equally beneficial to include industry whitepapers, recent business news, media reports, press releases, and interviews for a more comprehensive evaluation of scenarios using this DDM model.

Therefore, this paper seeks to establish Agentic AI as a distinct trigger for business disruption by primarily analyzing the latest applications, use cases, white papers, and industry reports through the lens of the Disruption Dynamics Maturity Model. By doing so, it aims to evaluate Agentic AI's role as a potential precursor to imminent business disruption.

2. Materials and methods

The development of Agentic AI has marked a pivotal moment in technological progress, garnering global interest due to its transformative potential. A large number of use-cases have evolved across various industry sectors. Looking at this pervasive impact across industries, it is intriguing to explore if Agentic AI could be the next trigger towards a wider business disruption.

Exploration of the relevant academic literature indicates that there is a lack of suitable frameworks which could be used for capturing and assessing the impact of one specific emerging technology on business disruption. Several articles today talk about the applications of Agentic AI on different industry sectors but there is no evidence of any existing frameworks ever applied empirically for assessing the impact of Agentic AI on business disruption.

As the Agentic AI developments are generally all recent and ongoing, and are only intensifying, there is a need to recognize this as a pertinent phenomenon and evaluate whether it would be the next trigger for disruption. While the Disruption Dynamics Maturity Model (DDMM) is originally aimed at capturing instances from the industry macro-environment and provide an industry-level view of impending disruption, it also allows the flexibility of converging the empirical observations on one specific emerging tech or phenomena and can even facilitate a cross-sector assessment for a high-level view of the total impact empirically.

Further, due to the rapid evolution of agentic AI in the last few years, in order to make any exploratory research relevant, one would need access to the latest emerging use cases, industry white papers and reports etc. The essence here is to make sure that the input to this research work is contemporary and recent. Consequently, this study used an integrative literature review to gather industry-specific insights and explore new perspectives on emerging business disruption use cases triggered by Agentic AI.

Information, insights and data from secondary sources, including online platforms, business news, industry portals, and whitepapers, were necessary to comprehensively inform the study of the impact of Agentic AI on the business disruption dimensions. Applying the Disruption Dynamics Maturity Model, the analysis uncovered insights into business disruption dynamics triggered by the Agentic AI within specific industry verticals.

2. 1 Framework and usage

Disruption Dynamics Maturity Model (DDMM) served as the principal analytical instrument for this research. The analysis has been carried out across the following eight dimensions as the key factors impacting the Business Disruption: Value elements, Formfactors, Entities, Operating Model, Consumption pattern, Interrelationships, Skill gap, and Regulation. (Mathur, 2024)

Informed by an analysis of recent and relevent literature, this study draws inferences to assess the ongoing impact of Agentic AI on each of the eight dimensions of the Disruption Dynamics Maturity Model. The research aims to identify any significant changes within these elements, supported by comprehensive literature and empirical observations of the perceived pace of change. While the empirical nature of this methodology introduces a degree of

subjectivity in the assessment, it nonetheless provides substantial visibility into emerging scenarios.

After evaluating all eight dimensions—namely Value Elements, Form Factors, Entities, Operating Model, Consumption Pattern, Interrelationships, Skill Gap, and Regulation—their perceived magnitudes are documented within the Disruption Dynamics Maturity Model. This model serves as a visual dashboard that facilitates early diagnosis and informed decision-making. It is noted that if more than four dimensions on the DDM model fall within the high to very high range, then business disruption is considered imminent.

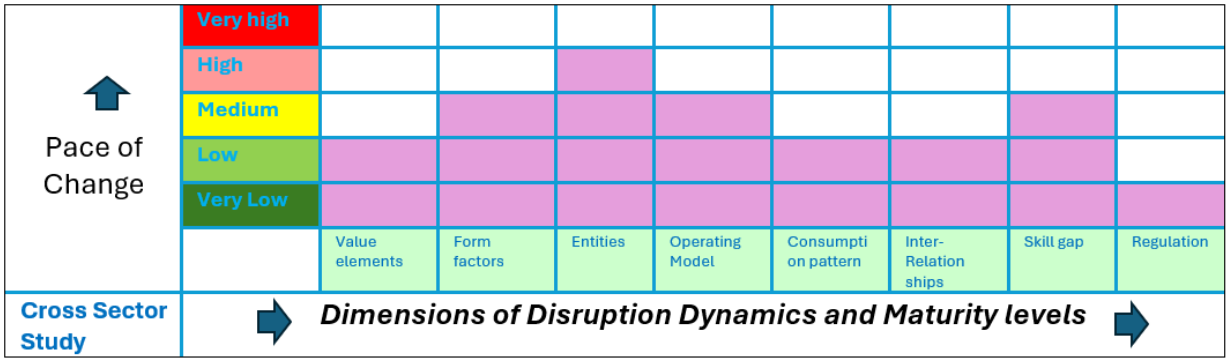
3. Results

Upon applying the perceived impact of the Agentic AI on the eight dimensions of the DDM model empirically, it was observed that the impact touched 'medium' level of maturity across three dimensions only, namely, Form factors, Operating model, and Skills gaps; and touched 'high' only on one dimension of Entities. Rest all dimensions were not visibly impacted and were inferred as 'low'. Hence, the impact of Agentic AI is not inferred to have caused disruption by now, as seven out of eight dimensions are medium or below. Hence, Agentic AI which does not have a high impact on four out of eight dimensions, did not qualify as a pertinent trigger towards business disruption.

Purdy (2024) rightly noted that the Agentic AI systems are in the early stages of development and have the potential to enhance human-machine collaboration, efficiency, and business growth, yet their transformative capabilities are not fully realized. These systems do not eliminate traditional workforce management challenges but modify them, requiring managers to focus on team composition, role selection, and goal setting to ensure successful integration of agentic AI or hybrid teams.

The impact of Agentic AI in this study was captured using the DDM model as illustrated in the diagram below. Although the AI led developments are happening very fast, however, through the empirical view, Agentic AI does not appear to be a pertinent trigger at this point in time.

Figure 1. The impact of Agentic AI was captured through a study of cross-industry use cases



4. Discussion

Agentic AI represents a significant advancement in artificial intelligence, distinguished by its ability to set and pursue complex goals independently in dynamic and uncontrolled environments. Unlike traditional AI systems, which function as supervised tools limited to predefined tasks and conditions, agentic AI can operate autonomously and adaptively across varying scenarios. Traditional AI systems excel in executing well-defined tasks within established parameters but struggle with tasks lacking clear endpoints or specific manipulable variables. In contrast, agentic AI is capable of goal-directed operations even amid drastic changes and multiple concurrent objectives, marking a qualitative leap in AI development. (Acharya, et.al. 2025)

To comprehensively assess the broader applicability and delve into the implications of Agentic AI as a catalyst for disruption, use cases were drawn from a diverse array of industry sectors and functions. These included Financial Services, Retail and E-Commerce, Warehousing, Human Resources, Urban Planning, Supply Chain, Healthcare, Industrial and Manufacturing, Video Analytics, Drug Discovery, the Legal Sector, and Cybersecurity. This methodical approach facilitated an evaluation of the widespread impact of Agentic AI across various domains.

Deployment of Agentic AI across various industries started marking a transformative shift in how organizations approached automation, decision-making, and operational efficiency. The discussion below captures the essence of cross-sector studies and use-cases to investigate the impact of Agentic AI. While there are several emerging use-cases, some significant representative use cases have been captured to gauge the impact and to determine whether Agentic AI is a pertinent trigger for disruption, if its impact is ‘high’ on more than four dimensions of the Disruption Dynamics Maturity Model.

4.1 Financial Services

In the financial services industry, the implementation of Agentic AI holds transformative potential, particularly in revolutionizing trading strategies. By leveraging its capacity to analyze vast amounts of market data swiftly, Agentic AI can enhance the execution of trades, thereby optimizing financial decision-making processes. A notable advantage of Agentic AI is its extensive reach, as it can be programmed to conduct exhaustive web searches, enabling agents to obtain updates and access real-time information, thus keeping financial practitioners informed and responsive to market fluctuations. (Finn & Downie, 2025)

Garvey, K. et.al. (2024) explained that Agentic AI holds the potential to revolutionize the financial services sector in several pivotal dimensions. Firstly, by automating routine tasks such as data entry, compliance verification, and transaction processing, agentic AI significantly enhances operational efficiency, thereby increasing productivity and minimizing human error. This automation liberates employees to engage in more strategic initiatives, fostering a more focused and innovative workforce. Secondly, agentic AI drives innovation through the development of novel financial instruments, exemplified by personalized robo-advisors and adaptive asset management systems. These tools are capable of real-time strategy adjustments in response to market dynamics and customer preferences, thereby offering a more responsive and personalized financial advisory service. Lastly, agentic AI enhances customer engagement by leveraging trends like open banking and embedded

finance to deliver highly customized AI agents. These agents are designed to manage finances autonomously, optimize financial decisions, and align financial strategies with individual goals and risk tolerances, thus empowering consumers to a degree unprecedented in the financial domain.

Agentic AI is poised to extend its capabilities beyond traditional functions, encompassing the planning, execution, and adaptive management of complex tasks with minimal human intervention. This evolution is anticipated to significantly transform financial decision-making processes, increasing operational efficiency while simultaneously presenting important challenges for governance frameworks. A primary enabler of agentic AI within the financial sector is its capacity for seamless integration with automated execution platforms. AI agents are capable not only of identifying market opportunities but also of autonomously initiating pre-authorized trades, dynamically recalibrating risk models, and generating automated compliance reports. The convergence of deep learning techniques and real-time decision-making mechanisms is projected to yield unprecedented gains in the efficiency of algorithmic trading, risk assessment, and credit evaluation. Moody's emphasizes that AI should not be regarded as a substitute for human expertise, but rather as a catalyst that facilitates more informed, efficient, and robust financial decision-making. By adopting AI as an augmentative rather than a replacement tool, financial institutions can realize significant advancements in risk management, analytical rigor, and innovation within the increasingly intricate landscape of the global economy. (Moody's, 2025)

The adoption of agentic artificial intelligence across diverse financial services applications is expected to drive substantial market growth, with projections indicating that the global market for agentic AI in this sector will expand at an average annual rate exceeding 40%, surpassing $80 billion by 2034. Within banking, agentic AI has the potential to enhance fraud detection by identifying anomalous patterns and autonomously responding to suspicious activity. In the insurance industry, such systems facilitate the automation of risk assessment and claims processing. Asset management firms, meanwhile, are utilizing intelligent agents to adjust portfolios in real time, thereby responding promptly to market fluctuations and enabling the customization of investment strategies to individual client needs. Nevertheless, despite its anticipated contributions to improved decision-making and risk management, the integration of agentic AI into financial services introduces significant challenges. Quantifying the productivity enhancements and return on investment attributable to AI agents remains complex, while persistent concerns regarding trust, data privacy, cybersecurity, and compliance with evolving regulations continue to pose substantial obstacles for industry stakeholders. (FT, 2025)

4.2 Retail and E-Commerce

Marr (2025) noted that the burgeoning potential of agentic AI is already manifesting in numerous applications within the e-commerce domain. Innovative shopping bots are emerging, enabling users to navigate multiple online retailers to secure the most advantageous prices, deals, and promotions. Platforms like Salesforce's Agentforce empower retailers to create AI agents capable of seamless integration and interaction with their existing systems. In customer service, agentic AI surpasses traditional generative AI chatbots by offering more flexible problem-solving capabilities, including automatic system diagnostics

and issue resolution. Amazon's Q platform facilitates businesses in developing these advanced agentic functionalities.

Although retail value chain management is in the early stages of adopting Generative AI (GenAI), dynamic pricing strategy optimization represents a promising application for agentic AI, offering a potential shift beyond basic price setting by incorporating real-time supply chain considerations such as costs and material availability. Agentic AI enhances pricing decisions by analyzing comprehensive data, including historical sales, inventory levels, and transportation costs, to determine price elasticity and provide informed recommendations that align pricing with supply chain conditions, thereby improving both pricing and operational efficiencies. (Finley, 2024)

Additionally, agentic AI offers transformative advancements in dynamic pricing, allowing retailers to monitor competitors and generate innovative pricing metrics that incorporate overlooked variables. Amazon already provides merchants with AI tools for dynamic pricing, indicating the clear potential for enhanced automation through agentic functions. In supply chain and inventory management, pioneers like Walmart and Alibaba have employed AI, paving the way for agentic AI systems to advance these processes. These sophisticated bots will autonomously negotiate with suppliers and distributors, coordinating deliveries, restocking, and optimizing warehouse space utilization seamlessly. (Marr, 2025)

Dadhich (2005) idenitifed that AI agents are transforming the landscape of eCommerce by automating a variety of tasks, analyzing consumer behavior, and delivering personalized experiences in real time. These agents significantly improve product recommendation systems, optimize both search functionalities and merchandising strategies, and streamline operational processes, resulting in greater efficiency and increased conversion rates. Leveraging AI-driven insights, businesses are better equipped to anticipate emerging market trends, refine their marketing strategies, and offer a superior overall shopping experience. Further noted that integration of AI agents within eCommerce platforms redefines key aspects such as search functionality, strategic product placement, and individualized recommendations. Specifically, AI-enhanced search capabilities enable customers to efficiently locate desired products, while intelligent merchandising facilitates effective product display. In addition, AI-powered recommendation engines amplify consumer engagement by providing tailored suggestions, thereby driving higher conversion rates and contributing to the overall performance and competitiveness of eCommerce enterprises.

4.3 Warehousing

In the realm of robotics, the deployment of Agentic AI is already influencing industrial operations, as seen in environments like Amazon warehouses. These facilities utilize robotic systems to optimize warehouse automation and manufacturing processes. The capability of Agentic AI to undertake complex tasks autonomously is instrumental in this context, allowing the robots to execute specific functions efficiently without continuous human oversight. This not only enhances operational efficiency but also supports the scalability of automated systems within industrial settings. (Finn & Downie, 2025)

Agentic AI revolutionizes warehouse space optimization by automating layout configurations, enhancing space utilization, and significantly improving operational efficiency. Through dynamic product slotting, AI agents streamline workflows and minimize

downtime by implementing predictive maintenance strategies. The integration of real-time inventory management allows warehouses to remain agile and responsive to fluctuations in demand, thereby facilitating more rapid operations and optimal resource utilization. Collectively, these advancements lead to enhanced operational speed and improved efficiency in resource allocation within warehouse environments. (Gill, 2024)

Tiwari (2025) explains that Agentic AI is transforming data warehousing through a range of key applications, including autonomous management of data pipelines, intelligent data quality monitoring, adaptive handling of schema evolution, cost optimization, and automated metadata management. Specifically, agentic AI can dynamically orchestrate ETL/ELT processes by detecting schema changes, rerouting jobs during failures, and scaling compute resources in response to usage patterns. It continuously monitors data quality, proactively identifies anomalies, suggests data cleansing rules, and escalates issues to stakeholders only as needed. Further, In addressing schema evolution, agentic AI detects and logs changes, updates downstream data models, and validates system compatibility with minimal downtime. For cost efficiency, it analyzes usage and query patterns to recommend or implement optimizations such as shutting down idle clusters or restructuring expensive queries. Furthermore, agentic AI automates metadata management by generating business descriptions, tracking data lineage, and linking datasets to user profiles and regulatory requirements, thereby greatly enhancing operational efficiency and data governance in modern data warehouse environments.

4.4 Human Resources

In human resources, Agentic AI extends beyond the functionalities of general AI by enabling autonomous decision-making and providing dynamic support for employees. AI agents can automate routine HR tasks and deliver personalized responses, thus freeing HR professionals from administrative burdens and allowing them to concentrate on strategic organizational goals. This transformation enhances operational efficiency within HR departments and improves the overall employee experience by ensuring timely and customized support services. (Finn & Downie, 2025)

In the contemporary business environment, substantial time is expended on repetitive human resources tasks, such as reviewing extensive policy documents, managing multiple applications, and navigating intricate processes. These activities, including employee support, talent acquisition, onboarding, and performance reviews, significantly detract from strategic focus and impede productivity. HR agents leverage a comprehensive array of prebuilt conversational AI automations, referred to as "skill-flows," to efficiently manage these complex and significant HR tasks while ensuring adherence to compliance requirements and company policies. This enables HR leaders to deploy these agents more rapidly than before, providing self-service solutions through a trusted and intuitive natural language chat interface. (IBM, n.d.)

Agentic AI constitutes a substantial advancement in both autonomy and intelligence; however, its optimal efficacy is achieved only through sustained human involvement throughout its operational lifecycle. Human oversight remains integral in guiding, validating, and refining each stage—whether this involves reviewing agent outputs, managing evaluation loops, or curating robust data pipelines. Such engagement introduces essential structure and accountability, thereby fostering trust and reliability in AI systems. Despite significant

progress in agentic intelligence, these systems are inherently limited in their capacity to discern nuance, interpret intent, or navigate ethical complexities, which can result in unintended outcomes. The incorporation of Human-in-the-Loop (HiTL) methodologies is thus fundamental—not merely as a safeguard, but as a foundational mechanism for shaping, monitoring, and scaling agentic AI responsibly. HiTL ensures that human judgment intervenes at critical stages: validating outputs, rectifying errors, fine-tuning algorithms, and supplying context-aware decision-making. Moreover, human reviewers are indispensable in detecting inaccuracies, mitigating risks associated with AI-generated 'hallucinations' or reasoning flaws, and exercising ethical oversight in high-stakes situations where large language models should not serve as the final arbiters. Importantly, continuous human feedback drives ongoing improvement, aligning agentic AI more closely with organizational objectives and user intent over time. (iMerit, 2025)

4.5 Urban planning

Urban planning is another sector benefitting from the integration of Agentic AI systems, which offer planners advanced tools for analyzing diverse datasets. These systems can examine real-time traffic data and information from camera sensors to facilitate informed decision-making. The intuitive capabilities of Agentic AI can significantly reduce the workload of urban planning teams by simplifying the creation of presentation materials and analytical tables, thereby expediting the planning process and allowing planners to focus on strategic developmental priorities. (Finn & Downie, 2025)

Agentic AI has become a pivotal element in urban development, greatly enhancing the efficiency and functionality of modern cities by expeditiously processing and analyzing vast datasets. This has led to notable improvements in urban living, such as optimized traffic systems, increased energy efficiency, and enhanced public safety, all contributing to more sustainable and livable urban environments. As cities grow and face complex challenges, the strategic integration of agentic AI in urban planning and management is increasingly vital, offering the prospect of more intelligent and responsive urban settings. However, to fully leverage the benefits of agentic AI, cities must adopt a strategic and ethical approach to its integration, emphasizing meticulous planning to ensure privacy, equity, and the prevention of biases. Moreover, actively involving communities in the planning process is essential to align AI implementations with diverse needs and values. By addressing these challenges through transparency and collaboration, cities can realize the transformative potential of AI, advancing towards smarter and more human-centric urban living. (Digitaldefynd, n.d.)

4.6 Supply Chain

Agentic AI addresses the limitations of risk management in traditional tools by integrating multiple data sources to provide specific, proactive solutions for global supply chain risks, such as disruptions from weather events, geopolitical shifts, and supplier reliability issues. Through autonomous data gathering and analysis, agentic AI offers a dynamic approach to supply chain risk management, supplemented by verifiers that ensure compliance with business goals and operational standards, thereby maintaining a resilient and efficient supply chain. Agentic AI enables the development and reuse of enterprise assets for enhanced supply chain management by creating a repository of transparent, replicable solutions that can be applied to future scenarios, thereby increasing efficiency and efficacy. Through autonomous data gathering and analysis, agentic AI offers a dynamic approach to supply chain risk

management, supplemented by verifiers that ensure compliance with business goals and operational standards, thereby maintaining a resilient and efficient supply chain. (Finley, 2024)

In supply chain planning, Agentic AI's evolution can be categorized into three key areas: enhancing data quality, improving model explainability, and developing autonomous capabilities as a planner co-pilot. Enhancing data quality involves the autonomous cleansing and preparation of input data, such as rectifying inconsistencies and standardizing formats, which is foundational for optimal analysis. Agentic AI can detect anomalies in sales, price, and inventory data using statistical methods and machine learning algorithms, ensuring high-quality data inputs. Model explainability is crucial in making AI's complex decision-making processes more transparent, particularly for demand forecasting and inventory optimization. AI agents provide detailed insights and visual aids to clarify how various factors influence decisions, contributing to a clearer understanding of forecasting and inventory recommendations. Lastly, with autonomous capabilities, Agentic AI acts as a planner co-pilot by automating reorders, intelligently managing inventory movement, and dynamically adjusting pricing strategies based on real-time inventory levels and demand. This proactive role enhances supply chain efficiency and responsiveness, underscoring Agentic AI's potential to revolutionize the sector. (TrueGradient, 2025)

In supply chain management, AI agents optimize demand forecasting, inventory management, and supplier selection by analyzing procurement and logistics data, resulting in cost reductions and improved efficiency. AI agents continuously monitor production processes, adjusting parameters to improve product quality, consistency, and energy efficiency, thus reducing material waste and supporting sustainable manufacturing practices. By analyzing safety data, AI agents identify patterns and risks, facilitating the creation of safer work environments through improved communication and safety best practices. (Gill, 2024)

Bagchi (2025) explained that Agentic AI substantially advances supply chain and logistics management by integrating automation and data-driven insights to increase operational efficiency, adaptability, and decision quality. In warehousing, AI-enabled robots expedite tasks such as picking, packing, and sorting, thereby reducing labor costs, minimizing errors, and enhancing workplace safety. AI-driven customer service tools, including chatbots and virtual assistants, facilitate prompt support and real-time tracking, thus improving customer satisfaction. Moreover, AI systems analyze extensive datasets to anticipate risks and enable proactive mitigation of potential delays or disruptions. Through optimized resource allocation and streamlined processes, AI also contributes to significant cost reductions across supply chain operations. Additionally, agentic AI fosters greater supply chain transparency and regulatory compliance by improving the tracking and tracing of goods. Finally, it supports sustainability initiatives by identifying efficient routes, reducing emissions, and recommending environmentally friendly materials and practices.

4.7 Healthcare

Large language model-based agentic systems possess the capacity to process input data, engage in planning and decision-making, retain and reflect on information, interact and collaborate with users or other systems, and utilize diverse tools to take action. These multifaceted capabilities create extensive opportunities in medicine and healthcare, such as

automating clinical workflows and supporting multi-agent collaborative diagnosis. (Qiu, J., Lam, K., Li, G. et al. 2024)

Healthcare professionals leverage AI agents to distil vast amounts of medical and patient data, enabling better-informed care decisions and reducing the administrative burden on doctors. AI agents in healthcare provide continuous support, disseminating information about medication usage, scheduling appointments, and sending reminders to help patients adhere to treatment plans. (Pounds, 2024)

Agentic systems, leveraging large language models (LLMs) and multi-modal foundation models (FMs), are poised to revolutionize healthcare by analyzing extensive datasets - including clinical notes, patient histories, lab results, medical guidelines, clinical trials, and diagnostic imaging - to derive actionable insights. This enables clinicians to devote more attention to patient care, improving overall patient outcomes. By coordinating care plans and integrating data across healthcare infrastructures, these systems aim to reduce cognitive burdens on healthcare professionals, streamline workflows, and enhance resource efficiency. Equipped with task details, context, logical frameworks, and exploration tools, agentic systems can develop comprehensive care plans, extract critical insights, and coordinate complex care across departments. These capabilities promise to dismantle existing silos within the healthcare system, facilitating seamless communication between applications to optimize patient care delivery. (Kass-Hout & Sheeran, 2024)

4.8 Industrial and Manufacturing

Industrial operations are experiencing a transformative shift driven by advanced technologies, with AI agents playing a pivotal role. These intelligent systems facilitate automated decision-making, optimize production workflows, and elevate operational efficiency. According to the whitepaper, the integration of AI agents transcends the adoption of new technological tools and signifies a fundamental change in industrial processes. Through the deployment of AI agents, organizations can develop self-regulating production environments, enhance resource allocation, and increase overall operational adaptability. This evolution enables human workers to concentrate on strategic decision-making, while AI agents assume responsibility for both routine and complex operational activities. (Ismail, 2025)

AI agents enhance manufacturing efficiency by automating repetitive tasks, streamlining workflows, and minimizing bottlenecks, leading to faster production cycles and decreased downtime. Through machine learning-driven inspections, AI agents enable more precise defect detection in quality control, reducing waste and enhancing customer satisfaction by ensuring higher quality products. (Gill, 2024)

Various use-cases are emerging in the Industrial sector. Juna AI's Agentic Process Control platform autonomously manages industrial processes to optimize production throughput, enhance energy efficiency, and reduce emissions by utilizing industrial AI agents informed by real-time data. The platform’s features include the reduction of energy consumption through precise machine settings, leading to decreased peak and base loads, while also ensuring improved production quality via optimal process parameters and stability. (Juna.ai, 2024)

Many frontier technologies, including the industrial metaverse, digital twins, and advanced robotics, are set to revolutionize industrial operations, with AI as the foundational driver of this transformation. AI agents enhance the vision of manufacturing by enabling real-time decision-making, near-autonomous systems, and seamless human-machine collaboration. Despite stagnation in manufacturing productivity in regions like Germany and the United States over the past decade, these advancements present a significant opportunity to boost productivity and redefine competitive landscapes. Early adopters have already experienced up to 14% savings through AI, with AI agents building upon generative AI to autonomously interact with environments and execute tasks, marking a new phase of technological maturity beyond assistance systems. Two primary types of AI agents—virtual and embodied—are leading this transformation. Virtual AI agents advance digital autonomy, while embodied AI agents empower physical systems such as robots to perceive and act dynamically, collectively ushering in a new era of industrial automation by continuously expanding the potential capabilities of machines. (Bastubbe & Jain, 2025)

4.9 Video analytics

Video analytics AI agents enhance the capabilities of workforces dependent on visual information, processing data from cameras, IoT sensors, and vehicles to perform complex tasks like video search and summarization. These AI agents in video analytics can analyze large volumes of live or archived video, perform tasks using natural language requests, and deliver specialized functions such as visual question-answering. (Pounds, 2024)

AI Visual Agents are revolutionizing industries by equipping machines with the ability to understand and interpret images and videos with a level of precision akin to human perception. These agents significantly enhance operational efficiency, improve accuracy, and reduce costs in sectors such as healthcare, manufacturing, and retail. By utilizing deep learning and computer vision technologies, AI Visual Agents are capable of analyzing large volumes of visual data in real-time, providing powerful insights and automating complex tasks, thereby driving substantial improvements in various industry processes. (Gill, 2024)

The application of video analytics AI agents further extends to sending anomaly alerts, drafting incident reports, and improving quality control through visual inspections, enhancing operational efficiencies. Predictive maintenance benefits from video analytics AI agents by identifying potential issues before they escalate, thereby optimizing resource allocation and reducing downtime. (Pounds, 2024)

4.10 Drug discovery

Drug discovery is a complex, time-consuming process involving key stages such as identifying biological targets associated with diseases, screening potential compounds, optimizing chemical structures, and conducting preclinical testing to develop effective and safe treatments. Agentic AI, when integrated with computer vision, automates crucial stages like chemical synthesis, thus enhancing speed and efficiency. Chemical synthesis, which involves combining different compounds to create new substances through controlled reactions, traditionally required manual adjustments by scientists. Agentic AI systems now monitor reactions in real-time, analyze visual changes (such as color alterations or crystal formations), and make immediate decisions to optimize the process, such as adjusting temperature or adding chemicals. By continuously learning from previous reactions, agentic

AI increases its decision-making accuracy over time, minimizing the need for manual intervention and accelerating drug development. (Vina, 2025)

In contrast to traditional AI systems used in drug discovery, which might simply scan datasets to identify potential drug candidates for human analysis, Agentic AI is far more autonomous and proactive. It not only identifies promising molecules but also conducts additional simulations, explores variations, and refines predictions independently of human intervention. Furthermore, if unexpected toxicity arises in a molecule, the AI modifies the structure and executes new simulations autonomously before any human review occurs. This advanced AI system goes beyond just processing inputs to produce outputs; it reasons, anticipates, and applies learning from past failures to inform future decisions. Unlike systems that operate on fixed scripts, Agentic AI operates through logical steps, actively searching for alternative solutions and testing them when problems arise. It doesn't merely follow rules but continuously enhances its performance over time, effectively becoming a machine capable of action rather than mere information processing. (Smith, 2025)

4.11 Legal Sector

The integration of Agentic AI into legal workflows holds the potential to transform the legal sector by improving efficiency and productivity significantly. This advanced technology enables legal professionals to conduct comprehensive legal research at unprecedented speeds, dramatically reducing the time required from hours to mere minutes. By providing access to extensive legal databases, Agentic AI facilitates rapid case law research and in-depth analysis, offering detailed citations and concise document summaries for enhanced accuracy and speed. It also presents valuable insights into key clauses and potential risks, supporting compliance efforts by aligning with regulatory requirements. Additionally, Agentic AI streamlines the drafting and revision of legal documents, allowing for precise contract creation and collaboration while ensuring adherence to current regulatory standards. By expediting the contract revision process through specific guidelines and meticulous redlining, Agentic AI reduces the time and effort needed for compliance reviews, allowing legal practitioners to focus on more complex tasks. As a remarkable advancement in the legal field, Agentic AI addresses traditional challenges with efficient and reliable solutions, ensuring the authenticity and accuracy of legal documents, enhancing compliance, and minimizing human error, thereby improving overall quality and productivity in legal practices. (Ema, n.d.)

Law firms at the forefront of exploring agentic AI in the legal sector are developing two parallel paths: the technological aspect, which is being earnestly experimented with, and a critical project management component that necessitates an understanding of workflows and team dynamics for various legal tasks. Work is being done right now to inch law firms closer to that reality, but it remains in its early stages. Agentic AI for legal today is currently just in the testing phase, and it only exists in law firms or legal organizations with thoroughly developed technology functions that also have the data scientists and engineers able to build it. However, given the rapid pace of technology advancement, it shouldn't surprise anybody to see AI agents pop up on legal teams sometime soon. (Warren, 2024)

4.12 Cybersecurity

AI agents in cybersecurity autonomously detect, react to, and mitigate security and fraud threats in near real-time, significantly reducing response times and enhancing overall security

measures. By enabling personalized security protocols, AI agents adapt to specific threats and vulnerabilities, creating a more robust defense mechanism tailored to individual security needs. The deployment of AI agents contributes to efficiency and cost savings in cybersecurity through the automation of routine tasks and security responses, thus streamlining operations. Beam, an AI agent vendor, emphasizes the role of agentic automation in ensuring stronger and more adaptive cybersecurity defenses, enhancing the overall security architecture. (Gross, 2024)

A recent report cautions that hackers employing agentic AI systems could significantly transform the global threat landscape. According to Malwarebytes' latest research in its "2025 State of Malware" report, agentic AI systems are anticipated to "further revolutionize cybercriminal tactics." The security firm emphasizes the necessity for businesses to brace themselves for AI-powered ransomware attacks, particularly underscoring the threat posed by malicious AI agents capable of autonomous reasoning, planning, and tool utilization. (Klappholz, 2025)

4.13 Other emerging use cases observed: Chemical, Steel, Paper, Wood, Textile, Cement

Agentic AI based Process Control platforms autonomously operate complex industrial processes, enhancing production throughput, energy efficiency, and reducing emissions through the use of industrial AI agents that leverage real-time data. Such platforms feature capabilities to lower energy consumption by optimizing machine settings, reducing both peak and base loads, and improving production quality by maintaining optimal process parameters and stability. They facilitate seamless system integration with a range of technologies ensuring broad connectivity and adaptability within industrial environments. Advanced AI agents utilize cutting-edge technologies such as Reinforcement Learning and Deep Learning, assisting operations teams in identifying optimal operating conditions for production facilities. (Juna.ai, 2024)

AI agents drive data-driven decision-making by providing comprehensive insights, supporting enhanced strategic planning and operational outcomes across all manufacturing levels. Customization in manufacturing is facilitated by AI agents that analyze customer preferences and adjust production processes accordingly, allowing the production of personalized products without compromising efficiency or cost. AI agents continuously learn and adapt from data inputs, refining algorithms to maintain efficient manufacturing processes in response to changing market conditions, ensuring sustained competitive advantage. (Gill, 2024)

The most advanced forms of Agentic AI transcend mere simulation of decision-making processes by exhibiting forms of cognition that resemble human reasoning. These systems develop an internal logic that allows them to adapt through pattern recognition and contextual understanding, prioritizing tasks based on long-term goals rather than merely processing data or executing tasks. Unlike most reactive AI systems that simply respond to inputs with outputs, these advanced AI systems anticipate and plan by emulating human cognitive functions. In this higher stage of development, AI behaves analogously to scientists: it not only detects trends but also develops theories, makes inferences beyond pattern matching, and restructures entire problems rather than simply optimizing parameters, thereby exhibiting characteristics akin to genuine thought. (Smith, 2025)

4.14 Limitations and Scope of future study

Due to the swift pace of technological advancements, this study primarily relies on literature and information produced within a relatively short timeframe. As a result, it draws heavily from industry whitepapers, business news, and media reports. While this agile approach is crucial for ensuring that the analysis remains realistic and actionable, it is important to acknowledge that the perceived impact may shift with alterations in industry sector scenarios. Consequently, to maintain effective decision-making, it is necessary to apply the Disruption Dynamics Maturity Model (DDMM) on a frequent basis, ideally every few months.

The integrative literature review has revealed a substantial opportunity for future research that is concentrated on specific industry sectors to evaluate the impact of emerging technologies such as Agentic AI. Conducting an in-depth study focused on a particular sector is likely to provide a more nuanced and contextual understanding of the disruptive potential of Agentic AI.

5. Conclusion

Agentic AI is not yet a pertinent trigger towards business disruption. A recent Capgemini survey highlights growing interest in AI agents, with 10% of organizations already utilizing them, over half planning to adopt them within the next year, and 82% aiming for integration over the next three years. As agentic AI evolves, retailers can leverage its capabilities to construct smarter and more resilient supply chains, with IDC reporting retail industry spending on AI reaching approximately $25 billion this year. (Finley, 2024)

Viswanathan (2025) explains that Agentic AI exhibits transformative potential across various domains, emphasizing important considerations for its future development and implementation. It represents a significant evolution in artificial intelligence, distinguished by advanced autonomous decision-making capabilities, adaptive learning mechanisms, and widespread applicability across industries such as manufacturing, healthcare, transportation, and financial services. These systems are revolutionizing traditional operational paradigms, bringing forth new opportunities for automation and optimization. However, successful deployment requires careful attention to ethical implications, technical challenges, and implementation barriers. Further, the development of robust accountability frameworks, consideration of societal impacts, and establishment of appropriate governance structures are essential. As the field progresses, promising advancements are anticipated in autonomous capabilities, learning algorithms, and integration with emerging technologies. Despite the challenges of system reliability, regulatory compliance, and cost, the potential benefits of Agentic AI in enhancing operational efficiency, decision-making, and innovation capabilities render it a critical technology for future development.

Purdy (2024) rightly emphasized “Managers must carefully define the parameters for when agentic AI systems can autonomously make decisions and when human intervention is necessary, highlighting the need for a balanced approach in decision-making responsibilities. The limitations of agentic AI include its current developmental immaturity and the persistence of traditional management challenges, necessitating cautious oversight to effectively integrate AI within existing organizational structures”.

The application of Disruption Dynamics Maturity Model on this cross-sector study revealed that while Agentic AI has given rise to opportunities and numerous new firms have emerged, it is evident that Agentic AI has not yet become a disruption trigger.

Agentic AI's present impact is largely limited to efficiency gains and performance improvement. However, future studies must continuously observe the developments in this area as it is a rapidly emerging technology and might impact the existing business models in the future. The study also revealed that certain business verticals are impacted more pervasively than others, hence the business decision makers must carry out a further sector specific analysis using the DDM model to assess the impact fully.

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