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THE POTENTIAL APPLICATION OF ARTIFICIAL INTELLIGENCE IN BUSINESS VALUATION

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In the field of business valuation, artificial intelligence ("AI") has the potential to be revolutionary. Although AI possesses promising abilities that can assist a valuation analyst with developing an analysis, its application raises concerns. There are several key considerations that a valuation analyst must carefully evaluate before relying on AI.

Introduction

Artificial intelligence ("AI") promises to be a highly capable and powerful technology. At a time when AI is integrating into more facets of business, valuation analysts should begin to familiarize themselves with the concept of AI in general and further consider how they may use AI if it becomes a necessary tool in their profession.

Even with the potential application of AI in business valuation, the role of a valuation analyst cannot be overstated. To perform an analysis, a valuation analyst must apply their knowledge based on all relevant facts and information. The valuation analyst must draw upon an understanding of markets, trends, and financial analysis. In this sense, the complexity of a valuation and the personal expertise required to derive a proper understanding of a company's position requires a uniquely human comprehension—it cannot be replicated by technology or algorithms.

However, AI offers the potential for greater data analysis, predictive modeling, and dynamic market benchmarking, among many other potential applications. AI can be used to process vast amounts of data at near instantaneous speeds, allowing the analyst to efficiently find information valuable to the analysis. AI also may assist valuation analysts in performing the many day-to-day administrative tasks that take time away from performing an analysis.

Business valuation is said to be an art, balancing both objective fact and subjective analysis. Ultimately, the valuation analyst should begin to consider AI as a tool, like how an analyst uses Microsoft Excel for basic financial analysis and calculations, Microsoft Word for document creation, or virtual meeting platforms for long-distance communications. These types of digital tools represent technological advancements from manual or analog processes and are now common, and even necessary, for any business professional.

In fact, AI already is integrated into many of the basic tools valuation analysts use today. For example, Google uses AI to tailor Internet search results based on context and keywords, while the spell-check function in Microsoft Word applies rules-based AI systems—typically created as "if-then" statements—to make spelling and grammatical suggestions.[1]

Nevertheless, the industry has only scratched the surface as far as how AI can be applied in the valuation process. Because the full potential of AI is yet to be fully realized, it is difficult to determine exactly how the AI landscape will look within the field of valuation, whether AI systems will be proprietary company software or third-party tools used at the discretion of the valuation analyst. The only thing that is certain is that AI could be a powerful tool for the valuation analyst in the future.

An Overview of AI

AI refers to the simulation of human intelligence by machines to complete tasks that typically require human thought processes, such as learning, problem solving, and reasoning. AI systems rely on algorithms and collected information to find patterns and make decisions autonomously.[2] The most common AI systems available today are used in virtual assistants, such as Apple's Siri or Amazon's Alexa; recommendation engines, such as Google Search or Netflix; facial recognition, such as Apple's Face ID; and autonomous vehicles, such as Tesla's Autopilot.

AI encompasses many subfields—including but not limited to—machine learning ("ML"), deep learning ("DL"), and natural language processing ("NLP").[3]

Machine Learning

ML allows computers to learn and enhance their abilities over time by analyzing information without being explicitly programmed to do so. ML models are created by training algorithms to make predictions or classifications based on input data.[4] ML is generally best

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suited to be used in situations involving large quantities of data (which can include text, images, or audio).

For example, Google Translate relies significantly on ML because this software is trained on extraordinary amounts of data from the Internet in different languages.[5] One popular type of ML algorithm is artificial neural networks ("ANNs"), which are computing systems modeled after the human brain's structure and function.[6] These networks are suited to perform tasks that involve analyzing complex patterns or discovering relationships in large datasets.[7]

Deep Learning

DL is a specialized field within ML that uses multilayered neural networks (or "deep neural networks"). These deep networks are usually made up of hundreds of layers, are modeled on the human brain, and are meant to closely simulate the decision-making process of people. DL is more advanced than ML, is adept at processing a greater variety of data types, and requires less human intervention—enabling unsupervised learning.[8] DL is used in highly intricate processes, such as autonomous vehicles, image recognition systems, or medical diagnostics.[9]

Natural Language Processing

NLP is another field within ML that focuses on enabling machines to understand, interpret, and interact with the

human language. NLP enables easier communication between humans and machines by allowing users to do so with natural human language. As a result, NLP is most commonly used in chatbots, like ChatGPT; or virtual assistants, like Siri or Alexa. NLP is particularly effective in the automation of repetitive tasks or improving data analysis. As a tool that processes language, NLP also is particularly effective at extracting insights from sources of text, finding patterns, trends, or sentiments within written words. NLP tools also can efficiently summarize or categorize significant amounts of text, enabling the analyst to quickly identify key information.[10]

For example, Microsoft's Copilot is an AI-powered tool used by many businesses. It is designed to assist users to perform tasks such as summarizing or reviewing emails or documents, drafting emails, analyzing spreadsheets, or organizing documents. Copilot uses NLP to identify, collect, and understand relevant information from specified sources, such as Word documents, emails, or websites.[11]

AI's Potential in Business Valuation

The potential integration of AI in business valuation offers new ways to enhance accuracy, efficiency, and decision-making in the valuation process. Valuation analysts rely on financial statements, market data, and industry trends in their analysis and must perform an exhaustive review of all information pertinent to an engagement. In some instances, a valuation analyst must review hundreds or even thousands of documents, which can take many hours to complete. AI has the potential to streamline these processes by automating data collection and analysis. ML models, for instance, can detect patterns and correlations in large datasets that may not be apparent through traditional review.[12]

Valuation analysts often are tasked with reviewing a significant amount of company data in search of information that may impact value, or they may gather unrefined data from external sources. In these scenarios, AI could efficiently extract any relevant data, allowing the valuation analyst to quickly verify the information and apply it to their valuation. AI tools also could be dynamic, in that they can provide more responsive results in circumstances where the market changes quickly. For example, a valuation may consider company share prices or market trends, which are subject to constant change. AI could quickly adapt to these changing variables.[13]

To enable AI to perform any desired tasks, a person must be able to sufficiently prompt the system, providing clear communication and stating the desired outcome. As it relates to AI, "prompting" is the written instruction that commands the AI system to generate a desired outcome. An effective prompt directly contributes to the quality of the output of the operation. A bad prompt could lead to mistakes, while unclear commands might not yield the desired outcome. The effective use of AI requires the writer to provide proper context and specificity—and, in the case of using conversational AI systems, be able to build on the conversation.[14]

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Although AI can identify many of the key factors that may impact a business valuation, AI will not necessarily provide a comprehensive and completely accurate conclusion of all factors that may be relevant. These models (such as classic ML algorithms) are often limited to what is included in the data, which, without an understanding of context, may not fully reflect the state of a company or a company's position in its market.

However, AI could augment the expertise of a valuation analyst by minimizing manual errors and decreasing the time necessary for data review. For example, an NLP could extract relevant information from unstructured data sources, such as a company's operating agreements, shareholder agreements, or leases.[15] A review of these documents requires a careful examination of key details. An NLP could be prompted to find details that impact value, ensuring that the valuation analyst does not miss critical elements in an initial review.

AI also has the potential to automate many of the time-consuming tasks and existing processes when performing a business valuation, thus allowing the valuation analyst to focus on higher-level analysis and decision-making. Routine processes, such as data

gathering, market research, and basic calculations, could be completed using AI.[16]

Standardized processes are prevalent in most valuation firms and require manual inputs to update them. In instances where basic information is used as an input to run an analysis (such as updating a model with market data), AI would be able to efficiently update and run these processes while mitigating human error.

Although AI tools could eliminate standardized or redundant tasks, the valuation analyst still should retain full control over critical judgment calls, such as market interpretations or financial normalizations. By balancing automation with human oversight, AI could enable more consistent and accurate valuations while ensuring that the nuanced, context-specific aspects of each analysis are preserved.

VALUATION ANALYSTS SHOULD CONSIDER THE WAYS THAT THEY CAN BEGIN TO WORK WITH AI AND USE IT FOR WHAT IT IS—A TOOL.

For example, in some engagements, a valuation analyst is responsible for estimating a discount rate that accurately reflects market conditions, industry risks, a company's financial position, or the cost of capital. Estimating an appropriate discount rate often requires a valuation analyst's use of subjectivity but also is influenced by a broad understanding of external factors. The use of AI could assist in decision-making because these tools may aggregate and evaluate historical financial data, macroeconomic indicators, industry-specific risks, and peer benchmarks more efficiently.[17]

Additional ways that AI could potentially assist in a business valuation include, but are not limited to, the following:

1. Sensitivity Analysis: AI can dynamically adjust key variables for scenario testing, saving time compared to manually inputting each scenario and ensuring all possibilities are considered. ML models also may be able to quickly identify which variables lead to the highest sensitivity.[18]

2. Benchmarking: AI may be able to compile comparable industry or market data from sources with large datasets to assist in selecting appropriate multiples.

3. Executive Summaries: AI may be able to write concise summaries highlighting the most essential elements of a report or presentation.

4. Error Detection: AI may detect errors or inconsistencies in any report, financial data, or work product.

5. Administrative Tasks: AI may assist with administrative functions, such as summarizing emails or meetings, organizing calendars, setting reminders, and managing documents.[19]

Role of the Valuation Analyst when Using AI

Even if there were broad-based integration of AI into the field of business valuation, the role of the valuation analyst would remain the most critical component of the valuation service. Any valuation service provided to a client requires correspondence and personal relationships to drive the engagement. A valuation analyst serves as the face of their respective firm and, therefore, is personally responsible for all customer interactions. The application of AI should not diminish the role of the valuation analyst.

It is reasonable to assume that some level of AI will be used in the field of business valuation in the not-too-distant future. Given this circumstance, valuation analysts should consider the ways that they can begin to work with AI and use it for what it is—a tool.

There are a number of key responsibilities that the valuation analyst must maintain when using AI:

1. As noted previously, the process of prompting is necessary in the use of AI to execute specific functions. In fact, insufficient prompting may lead to a misuse of time by the user, negating the time-saving advantages of using AI. In any case, the role of the person using AI is integral to its proper operation.

2. A person must always ensure the accuracy of the information. Outcomes of any AI model must be fully and dutifully reviewed. A reviewer must check against misinformation and/

or bias that may influence the results of the operation because AI might not have corrected such mistakes. Examples of bias may come from incomplete training data or when the data being reviewed are reflective of human error or outdated information.

3. A person must also be able to interpret results generated from AI. The valuation analyst is the most knowledgeable party on the purpose of any engagement. To match insights or analysis to the requirements of the engagement, a contextual understanding of the matter by the valuation analyst is necessary. The valuation analyst must align any observations made by AI to the specific requirements of the engagement.

4. The valuation analyst is personally responsible for the integrity and authenticity of the engagement. The valuation analyst must be experienced and properly credentialed and must uphold all responsibilities and standards that are required of them. When performing a business valuation, simply reaching conclusions through AI alone is grossly insufficient. Without a deep understanding of all facets of the engagement by the valuation analyst, the business valuation carries no weight.

Potential Issues and Ethical Considerations

The use of AI in business valuations raises several ethical concerns. A notable consideration is the lack of transparency in AI models. Models such as DL algorithms often operate as "black boxes,"[20] making it difficult for the valuation analyst to fully understand and support how the model arrived at its conclusions.[21] If the valuation analyst does not have a clear understanding of how an AI model operates, there may be a lack of clear interpretation and justification of any conclusions reached using the model. This could create distrust in the valuation process and conclusions, damaging the professional reputation of the valuation analyst and leading to legal ramifications.

There also are significant concerns related to data privacy and security. Valuation analysts often are provided with proprietary financial data and internal company information. Improper management of this information could harm the company. If a valuation analyst introduces sensitive or confidential company

A valuation analyst must balance AI-powered data with sound professional judgment.

information into an AI model without proper safeguards or an understanding of how the information is handled within the system, the analyst may be in violation of regulatory compliance.

For example when a valuation analyst uploads company information into regularly used programs like Excel, they run the same risk, but they typically can store the data on a private system or network, mitigating the risk of external exposure.[22] Uploading such information into an AI system—particularly a third-party platform—might make the information more vulnerable to being used as training data or accessed by unwanted parties.[23] There is much uncertainty regarding the future regulatory landscape surrounding the use of AI and what protections are assured by these systems. Therefore, valuation analysts must exercise due diligence when managing company information within these systems and be able to ensure its protection and confidentiality.

The regular use of AI in the valuation process may also lead to an overreliance on automation. Business valuation is a nuanced field that deals with unique and complex scenarios, requiring applied knowledge and expert judgment on behalf of the valuation analyst. Relying too heavily on AI may result in oversimplified valuations that miss key qualitative factors.

Moreover, a valuation analyst may expect an AI system to produce accurate conclusions without a proper understanding of how AI reached them. Although it should not be expected that the valuation analyst has a complete technical understanding of how the AI system operates, they should be able to replicate the results being generated. To this point, the valuation analyst acts

as a sort of intermediary between the technology and its use in the valuation. A lack of understanding of how the AI reached its conclusion is problematic. If a valuation analyst cannot replicate outcomes or follow the logic reached by the AI, they may be unable to justify its application in the valuation process.

AI also suffers from "hallucinations,"[24] which can be caused by insufficient training data, incorrect assumptions, or biases used to train the model. This problem arises because many AI systems—particularly large language models—are trained on many datasets and may generate outputs based on patterns and not verifiable knowledge.[25]

If not thoroughly reviewed, this can lead to faulty analyses or misleading conclusions. Implementing AI requires significant human oversight and data checking. As with any technology, the valuation analyst should not rely solely on AI to make conclusions. Rather, the valuation analyst should thoroughly verify and validate the outputs to ensure accuracy and apply sound judgment.

Conclusion

The field of business valuation is no different from any other industry when it comes to assimilating with new powerful technology. Much like the evolution from traditional, manual calculations to the widespread standard use of Microsoft Excel and other digital tools, business valuation is marked by a natural technological progression toward greater efficiency. AI inevitably will advance, potentially making it a necessary tool for the valuation analyst to compete. However, the incorporation of AI should not be applied without the proper due diligence typically required from a valuation analyst. Some concerns surround AI, particularly now as this technology is in its nascent stages. Still, valuation analysts should be familiar with the potential applications of AI in business valuation and consider how to use it as a tool soon.
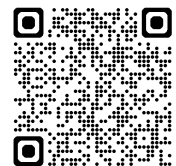
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References:

1 Eshika Shah, "Rule-based Systems in AI," Scaler.com, June 2023; and Kevin Rowe, "How Google Search Uses AI," *Search Engine Land*, September 2024.

2 IBM, "What is Artificial Intelligence (AI)?," August 2024.

3 Java Tutorial, "Subsets of Artificial Intelligence," javapoint.com (accessed October 7, 2024).

4 IBM, "What is Artificial Intelligence (AI)?."

5 MIT Sloan Teaching & Learning Technologies, "Machine Learning, Explained," April 2021.

6 ANNs consist of thousands or millions of interconnected processing nodes (like that of neurons in the human brain). ANNs process data and recognize patterns to perform complex tasks, like object recognition or predictions.

7 IBM, "What is Artificial Intelligence (AI)?."

8 Unsupervised learning uses ML algorithms to analyze unlabeled or unstructured datasets, discovering patterns or making predictions without the need for human intervention.

9 IBM, "What is Machine Learning?," (accessed October 7, 2024); MIT Sloan Teaching & Learning Technologies, "Machine Learning, Explained," April 2021; IBM, "What is Artificial Intelligence (AI)?"; and McKinsey & Company, "What is Deep Learning?," April 2024.

10 IBM, "What is NLP?," August 2024; MIT Sloan, "Machine Learning, Explained."

11 Microsoft Copilot Studio, "AI-based Copilot Authoring Overview," October 2024.

12 IBM, "What is Machine Learning?."

13 Yulia Sullivan, "Artificial Intelligence and Adaptive Response to Market Changes: A Strategy to Enhance Firm Performance and Innovation," *ScienceDirect*, March 2024.

14 MIT Sloan Teaching & Learning Technologies, "Effective Prompts for AI: The Essentials," (accessed October 14, 2024).

15 IBM, "What is NLP?."

16 MIT Sloan, "Machine Learning, Explained"; and IBM, "What is Machine Learning?."

17 Khurshid Ahmad, "The Rise of AI Aggregators: Transforming Data in Actionable Insights," Medium.com, December 2023.

18 Spencer Lanoue, "How to Do Sensitivity Analysis with AI," thebricks.com, October 2024.

19 Brian Clausen, "How Admin Professionals Can Use AI to Their Advantage," *SkillPath*, July 2023.

20 A black box refers to an AI system whose internal processes are not visible or understood by the user.

21 Saurabh Bagchi, "Why We Need to See Inside AI's Black Box," *Scientific American*, May 2023.

22 Cloudscene, "Public vs Private Internet – What's Best for Your Business?," November 2022.

23 West Virginia Office of Technology, "Risks of Artificial Intelligence," (accessed December 17, 2024).

24 AI hallucinations refer to incorrect or misleading results that may appear plausible but are factually inaccurate.

25 IBM, "What are AI Hallucinations?," (accessed October 23, 2024); and MIT Sloan Teaching & Learning Technologies, "When AI Gets It Wrong: Addressing AI Hallucinations and Bias," (accessed October 23, 2024).