

**AIS Research on AI: Achieving Comparative Advantage through Technology Agnosticism  
and Business Process Reengineering**

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## **AIS Research on AI: Achieving Comparative Advantage through Technology Agnosticism and Business Process Reengineering**

**Abstract:** Accounting researchers, especially but not limited to those in AIS, are enthusiastically embracing the large language model generative version of artificial intelligence, the most famous example of which is ChatGPT. These technologies are the product of extensive research by the private sector and academics in computer science and engineering. The monetary and human resources available to those parties far exceed those available to accounting researchers. This raises the question of how accounting researchers can add value. Building on the comparative advantage framework of Alles, Kogan, and Vasarhelyi (2008), we argue that accounting research into AI should be technology agnostic and apply the lessons from business process reengineering (BPR). That means focusing on the behavioral challenges in designing and implementing accounting processes to take advantage of AI rather than advocating for a specific application of its current version. Technology agnosticism and BPR are more likely to result in research that yields a comparative advantage for accounting researchers and reduces the risk of either duplicating work already being pursued by more qualified competitors or producing work that will be outdated when published.

**Keywords:** AI, comparative advantage, ChatGPT, Accounting research, AIS.

## 1. Introduction

On only the second day of his second term, President Trump announced a massive investment in artificial intelligence: “*President Trump on Tuesday announced a joint venture between OpenAI, SoftBank and Oracle to create at least \$100 billion in computing infrastructure to power artificial intelligence. The venture, called Stargate, adds to tech companies’ significant investments in U.S. data centers, huge buildings full of servers that provide computing power. Stargate could eventually invest as much as \$500 billion over four years.*”<sup>1</sup>

One week later, a Chinese startup launched a product called DeepSeek AI that approaches the capabilities of the best American AI apps, even though it supposedly cost only \$5.5 million to develop versus the billions spent by its American competitors.<sup>2</sup> The stock market reacted by sharply driving down the value of American firms involved with AI, with the chip manufacturer Nvidia alone losing several hundred billion in market cap in just one day.<sup>3</sup> DeepSeek AI was such a shock to the US that it was immediately called “another Sputnik moment”, referring to the historic reaction when the former Soviet Union won the race to launch a satellite into space.

While some have questioned the claims of DeepSeek AI capabilities, it is undeniable that its appearance surprised the most informed AI technologists and investors.<sup>4</sup> This is even though dramatic technological breakthroughs are more likely to occur with a still-emerging technology like generative AI than with mature ones.

The point of beginning this paper with the story of DeepSeek AI is the warning that it provides to accounting researchers who are now attempting to jump on the AI bandwagon. Understandably, they want to be part of what is claimed to be an inflection point, not just in technology but in the evolution of humanity itself.<sup>5</sup> However, if AI experts were blindsided by developments in their own field, the risk is even greater for those like accounting researchers who are consumers rather than producers of technology. The necessity for accounting researchers to

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<sup>1</sup> <https://www.nytimes.com/2025/01/21/technology/trump-openai-stargate-artificial-intelligence.html>.

<sup>2</sup> <https://www.deepseek.com/>.

<sup>3</sup> <https://www.nytimes.com/2025/01/27/business深深AI-nvidia-ai-chips.html>.

<sup>4</sup> <https://www.nytimes.com/2025/01/29/technology/deepseek-ai-startups-venture-capital.html>.

<sup>5</sup> [https://www.youtube.com/watch?v=5-BXY7rxKUc&ab\\_channel=TEDxTalks](https://www.youtube.com/watch?v=5-BXY7rxKUc&ab_channel=TEDxTalks).

embrace AI is a given. What requires careful consideration is how to maximize the value added they can provide while not crossing the line and attempting to do things beyond their capacity.

This is a concern not only with AI but with AIS research in general, as Alles, Kogan, and Vasarhelyi (2008) discussed regarding the technologies that impacted accounting in their day. They argued that accounting researchers should focus only on topics where they have what economists call a **comparative advantage**. In this paper, we apply their analysis to AI and give examples of the kinds of research topics accounting researchers may have a comparative advantage in pursuing today.

Given the rate of change in AI, we make the case that accounting researchers are more likely to achieve comparative advantage if they are **technology agnostic** about how AI will impact the future of accounting and apply the lessons from **business process reengineering (BPR)**. Technology agnosticism means that researchers limit themselves to the issues that AI will pose to accounting practice that will remain relevant regardless of how the capabilities of AI change in the future. BPR sees technology as a means and not an end, and focuses attention on the behavioral impact of technology on business processes. Combining technology agnosticism with insights from BPR is the basis for our proposal for a research approach that increases the probability of AIS researchers achieving a comparative advantage. Our goal is for AIS research into AI to be less susceptible to the danger of a future DeepSeek AI-like situation undermining its relevance, with papers being written that will prove to be outdated by the time they appear in print.

We are not advocating technology agnosticism when *implementing* AI in accounting practice today, as opposed to *researching* AI in accounting (BPR always remains relevant when implementing technology). There is no benefit from avoiding the necessary use of technology today because it will be more advanced ten years from now. However, being technology agnostic in accounting research into AI reduces the likelihood of stepping into areas better researched by those with deeper technical knowledge of AI. BPR ensures that technology agnosticism does not descend into mere Ludditism.

We support our proposed approach by giving examples where shortcomings in AI were more ephemeral than they seemed when they first arose. By contrast, there are behavioral aspects of AI as it impacts accounting practice that are likely to persist even as the technical capabilities

of AI continue to expand. Indeed, the more similar AI becomes to human intelligence, the more pressing the issue of how human accountants will interact with AI will become.

The following section discusses the challenge that AIS researchers face in obtaining a comparative advantage in AI research. Section 3 makes the case for being technology agnostic, with examples from research and practice of how advances in AI technology have overcome previous shortcomings. Section 4 discusses business process reengineering and what lessons it offers accounting researchers. Section 5 implements an AIS research strategy of technology agnosticism and BPR by examining behavioral issues that arise with AI. Specifically, we argue that one of the critical factors shaping the adoption of AI is whether it is a tool used to improve existing work processes or as a substitute for the human role in them. Section 6 examines the adoption of AI by the Big 4 and the implications of doing so on accounting practices. In section 7, we examine how well the three AI papers accepted to date in the Journal of Emerging Technologies in Accounting achieve a sustained comparative advantage, taking those papers as a representative sample of AIS research into AI. Closing comments are in section 8.

## **2. Comparative Advantage in AIS Research**

Despite decades of argument (Sutton 1992, 2004, 2010; Alles, 2018) about the specific boundaries of the accounting information systems (AIS) field, most AIS researchers would agree that it aspires to be the thought leader for the accounting profession in applying technology to accounting practice. The challenge of this goal is that much of the accounting technology accountants use originates from outside accounting. For example, in a typical Big 4 external audit today, the auditor extracts data from an enterprise resource planning (ERP) system, such as those developed by SAP®, stored in a relational database developed by a company like Oracle®. The extracted data is analyzed using Excel® or Power BI® from Microsoft, as well as Tableau software.

These technologies are the product of extensive research by the private sector and academics in computer science and engineering. The monetary and human resources available to those parties dwarf those available to accounting practice, let alone AIS researchers. To put this statement into perspective, the American Accounting Association (AAA) had 6,138 members in 2024. Among technology firms, Microsoft alone had over 228,000 full-time employees in 2024,

and it added more headcount in that year than the entire membership of the AAA.<sup>6</sup> Not all the people in either organization are involved in research. Nonetheless, the vast disparity in numbers alone, leaving aside the financing they have access to, raises the question of what kind of contribution AIS researchers can hope to make in the face of this formidable competition.

Alles, Kogan, and Vasarhelyi (2008) find a solution to this challenge in the economic principle of comparative advantage: *“To find people’s comparative advantages, do not compare their absolute advantages. Compare their opportunity costs. The magic of comparative advantage is that everyone has a comparative advantage at producing something. The upshot is quite extraordinary: Everyone stands to gain from trade. Even those who are disadvantaged at every task still have something valuable to offer.”*<sup>7</sup>

Alles, Kogan, and Vasarhelyi (2008) make the case that despite the absolute disadvantage that AIS researchers often face when compared to technologists in industry, they can still contribute. But only if they focus on their unique strengths rather than trying to compete head-to-head with their better-funded and more numerous competitors: *“It is our contention that if AIS academics are to succeed in creating value added research then they have to identify what they can do that the AIS industry, despite all its financial and human resource advantages, cannot or will not do. And what economic theory indicates is that such opportunities to add value always exist—if only academics are willing to seek them out.*

*It is the intense competition and resources of the industry that create an opening for academic AIS researchers. Competition and rapid technological change force firms to focus on short term profits and quick payback on their own R&D. Academics have the freedom to ask questions which do not have immediate answers or generate immediately profitable applications—in other words, as the theory of comparative advantage indicates, academics have a lower opportunity cost when focusing on developments in AIS that do not lead to short term products or*

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<https://aaahq.org/portals/0/documents/boardcouncil/july%202024%20council/Draft%20Council%20Minutes%20March%2011%202024.docx>;

<https://www.microsoft.com/investor/reports/ar23/>.

<https://www.macrotrends.net/stocks/charts/MSFT/microsoft/number-of-employees>.

<sup>7</sup> <https://www.econlib.org/library/Topics/Details/comparativeadvantage.html>.

*profits. Similarly, academics have a lower opportunity cost to invest in skills which focus more on the discovery stage of knowledge than on its practical application and commoditization.”*

How can AIS researchers implement the Alles, Kogan, and Vasarhelyi (2008) strategy of comparative advantage? By undertaking research on how technology is best applied to accounting practice and research, rather than advancing the technological frontier. They give the example of researchers examining the impact of using XBRL to tag 10K statements while leaving the development of XBRL’s foundational XML technology to the World Wide Web Consortium. An example from after Alles, Kogan, and Vasarhelyi (2008) is Jans, Alles, and Vasarhelyi (2013), who advocated using process mining in auditing, building on the conceptual development of process mining in data science (van der Aalst, 2016). Today, process mining is easily done using off-the-shelf software by companies such as Celonis.<sup>8</sup> Accounting researchers also extensively use commercially developed tools for data analysis (such as SAS<sup>®</sup>) and text mining (Python<sup>®</sup>) without attempting to develop such technology themselves.

Can accounting researchers similarly find a path towards comparative advantage when researching large language model-based generative artificial intelligence (now referred to, inaccurately, by the shorthand “AI”)?<sup>9</sup> The best-known example is ChatGPT, launched by OpenAI on November 30, 2022, which promptly changed the world. ChatGPT became the fastest consumer application in history up to that time, reaching the 100 million users benchmark in less than two months. Numerous competitor products have been subsequently released by both new startups and existing technology firms, such as Claude AI, Gemini AI, Apple AI, and so forth.<sup>10</sup> Moreover, these AI apps are being rapidly and continuously upgraded to provide better performance and extend their application to new domains like audio and video.

Private investment in AI up to May 2024 totaled over \$300 billion in the USA, \$91 billion in China, and \$45 billion in the EU.<sup>11</sup> Saudi Arabia alone unveiled plans to devote \$40 billion to AI.<sup>12</sup> Nvidia, the leading manufacturer of the chips used for AI, saw its market capitalization

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<sup>8</sup> [www.Celonis.com](http://www.Celonis.com).

<sup>9</sup> While there are many kinds of artificial intelligence, we shall follow standard practice of using the abbreviation AI to generically refer to the latest LLM version.

<sup>10</sup> <https://www.cnn.com/2023/11/30/tech/chatgpt-openai-revolution-one-year/index.html>.

<sup>11</sup> <https://sciencebusiness.net/news/ai-funding-and-research-china-and-us-outperform-europe/#>.

<sup>12</sup> <https://www.cbinsights.com/research/report/ai-trends-2023/>. <https://www.nytimes.com/2024/03/19/business/saudi-arabia-investment-artificial-intelligence.html>.

explode to well over \$3 trillion. It was once forecast to be the first company to reach the \$4 trillion level.<sup>13</sup>

Accounting researchers have not lagged in paying attention to this new industry. AI is the focus of feverish attention not just by AIS faculty but also by other accounting researchers who have previously shown little interest in technology. The fact that the theme of the 2025 Journal of Accounting Research conference—perhaps the most prestigious research forum for “mainstream” accounting research—is technology-based for the first time in its history (“*AI and Large Language Models in Accounting Research*”) is a striking indicator of how AI dominates accounting research today.<sup>14</sup>

This enthusiasm for AI research in accounting makes it even more essential to reiterate that the comparative advantage argument of Alles, Kogan, and Vasarhelyi (2008) also applies to accounting research into AI. Indeed, it applies to all researchers, not just those in accounting. Consider the following article from the Harvard Crimson of June 4, 2024. It discusses Harvard University’s AI initiative led by its newly established Kempner Institute. The institute is named after the mother and maternal grandparents of Facebook CEO Mark Zuckerberg, who donated \$500 million to create it.

It is apparent, however, that even this extraordinarily large amount of money does not permit Harvard to compete with the private sector in conducting basic research on AI: “*Yet at this point, even \$500 million had nothing on industry investment. As lavish and well-funded as the Kempner Institute might seem at Harvard, the past two years had seen frontier AI research become orders of magnitude more capital-intensive. In 2021, the largest AI models cost a few million dollars to produce, but by now the cost for training a frontier model may exceed \$1 billion. This ballooning scale has dramatically changed the relationship between academic and industry research. Rather than train the next generation of models themselves, AI researchers at Harvard must ask smaller questions—or different ones entirely. Elise Porter, the executive director of the Kempner Institute, puts it in stark terms. “The problems that industry is trying to solve — it’s a different ecosystem than the problems that we’re trying to solve,” she says.*

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<sup>13</sup> <https://fortune.com/2024/07/07/nvidia-win-race-4-trillion-market-cap-big-tech-outlook-google-microsoft-amazon-apple/>.

<sup>14</sup> <https://www.ssrn.com/index.cfm/en/janda/announcement/?id=14721>.

*The difference is materially evident in the relative size of computing clusters. Training and testing AI models require massive amounts of computing power, typically via clusters of high-powered graphics processing units. Last summer, the Kempner Institute ordered almost 400 state-of-the-art versions of these GPUs—likely a seven-figure purchase, as each unit was selling for around \$30,000 at the time. When the cluster is fully set up—the second half of the GPUs only arrived in May due to hardware issues and extreme demand—it will be one of the largest available in academia, Porter says. Meanwhile, Meta announced in January that it would buy 350,000 of the same processors, a staggering investment likely worth over \$10 billion. Google and OpenAI have made similar moves.”<sup>15</sup>*

This is a restatement of Alles, Kogan, and Vasarhelyi’s (2008) argument about the relative scale of academic and non-academic research into technology, albeit, in the case of AI, the amount of money involved dwarfs anything in accounting.<sup>16</sup> Furthermore, if computer scientists at the world’s richest university feel overwhelmed at the prospect of competing against their private sector counterparts in AI, what possible role can there be for accounting researchers? It is one thing for economic theory to argue that there always exists a comparative advantage between two parties and quite another to find out what that is and to pursue it successfully. Nevertheless, that is precisely what AI researchers at Harvard are planning to do, for the notion of comparative advantage is implicit in the statement in the article that “*Rather than train the next generation of models themselves, AI researchers at Harvard must ask smaller questions—or different ones entirely.*”

Have accounting researchers stated that comparative advantage requires them to ask different questions, let alone smaller ones, than their competitors? Judging from the published literature, few even seem to recognize that competitors exist. Instead, many are pursuing such goals as using AI to read PDF financial statements, as if dedicated AI researchers are not already undertaking such basic tasks.<sup>17</sup>

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<sup>15</sup> <https://www.thecrimson.com/article/2024/6/4/ai-boom-arrives-at-harvard/>.

<sup>16</sup> We can confidently state that not even Harvard’s accounting department has even a fraction of the \$500 million available to the university’s Kempner Institute.

<sup>17</sup> The proposal by an AIS researcher to try using ChatGPT to extract data from a PDF document is one that the authors themselves encountered recently. Software that already does the same thing is available at <https://notebooklm.google/>.

We also must discuss another reason why obtaining comparative advantage is particularly challenging for accounting researchers, which is the dynamics of the publication process in accounting.

Many papers published in the six leading accounting journals on the Financial Times 50 list are empirical analyses of the capital market impact of accounting disclosures. Empirical capital market research is “positive accounting research” that asks, “What did happen?” By contrast, consistent with its aspiration to be the thought leader in the accounting profession on applying technology to accounting practice, AIS research is often normative in that it asks, “What should happen?” AIS researchers make the case for using new and emerging technologies to improve accounting practice.

“Mainstream” accounting research has been overwhelmingly positive since Ball and Brown (1968). Since the AI revolution is still in its initial launch phase, positive research is challenging, given the lack of a mature implemented base. O’Leary (2008) argues that when a technology is just emerging, it is premature to attempt empirical analysis, which requires the stability that only exists with a mature technology: *“Because the technology has not yet been placed in an organizational setting, unfortunately, researchers focusing on applications are not likely to readily visualize the entire scope of applications of technologies at this step, since research is generally only being done at the development and prototype stage. Many of the technology’s advantages and disadvantages to enterprises are not likely to be visible since the technology has only received limited attention and has not been placed in many processes or organizational contexts.”*

Some authors (for example, Berger, Cai, Qiu, and Shen, 2025) use AI to improve empirical research methodology, like Hoitash and Hoitash (2018) did when they developed a new measure of accounting reporting complexity using XBRL tags. This may be considered a form of normative research, but the focus is on improving accounting research, not accounting practice.

By contrast, AIS research has adopted the “design science” approach (Geerts, 2011) to push the accounting profession toward new practices and techniques. The problem is that this approach tempts AIS researchers not just to apply AI to accounting problems but to try and “improve” the AI to make it a better fit. Researching how to enhance the capabilities of existing AI systems is where AIS researchers run into the comparative advantage trap. Perhaps unwittingly,

they often end up replicating work already being done by their better-funded (and better technically qualified) competitors elsewhere in the AI space, whether in computer science departments or the private sector.<sup>18</sup> Normative AIS research into AI faces the most significant challenge in establishing a comparative advantage for itself.

Another critical constraint that accounting researchers face when trying to contribute to the AI area is the length of time it takes to go through the review process at accounting journals (Hurley, Gal-Or, Knechel, Pesch, 2025). Even in the best circumstances, meaning a rapid review process that does not extend to multiple rounds at multiple journals, it can take up to two years after a research project is initially completed until the final version of the paper appears in print in one of the leading AIS journals (the time frame at an FT50 journal is probably four years).

To put that time scale into perspective, two years before the writing of this paper began, ChatGPT had yet to be released. Accounting researchers do not move at the pace of Silicon Valley: “Move fast and break things” is not an argument that convinces the average referee. AI, on the other hand, is advancing at a breathtaking pace, and it is hard for either accounting practitioners or researchers, even for the minority of those who are experts in the underlying technology, to predict what capabilities it will have six months from now, let alone in two years or more.

Given the exuberance over AI research, some journals (AIS ones especially) may seek to reduce this lag by pushing AI submissions faster through the review process. However, structural reasons (particularly the difficulty in obtaining referees today) make this strategy unlikely to be sustainable.

The timing issue exacerbates the need to establish a comparative advantage and creates hurdles for accounting researchers trying to contribute to the literature in AI. Since they do not drive the development of AI as a technology, accounting researchers continuously risk duplicating work already done by others. At the same time, the length of the review process results in work that may become obsolete before appearing in print. Indeed, this paper’s authors have personally reviewed journal submissions subject to one or both issues, as likely have many of the readers of this paper.

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<sup>18</sup> We have seen many such papers, though, for obvious reasons, we choose not to cite any by name.

### 3. The case for being technology agnostic

Technology agnostic AIS research into AI means research that examines how accounting practice will have to change in the face of the AI revolution, as opposed to research into AI itself. The key distinction is that technology agnosticism reduces the dependency of the research output on the current capabilities of AI by focusing more on persistent problems in accounting.

Being technology agnostic is not a new concept. In business, being technology agnostic means not tying yourself to any one vendor: “*Following a technology-agnostic approach means that as a business, you are unbiased towards the use of any specific technologies to solve your business problems. Being technology-agnostic supports the notion that there is no ‘one size fits all’ for a particular problem. There are many ways to skin the cat (so to speak).*

*It may sound strange for a company deeply engaged in the technical side of business to advocate for taking a non-technological approach to solving a problem. But sometimes, that’s precisely the right thing to do. It is easy to get swept up in the multitude of fantastic tools that have been developed to make modern businesses run smoothly. With access to more and more data, it’s inevitable that a horde of technology companies will race to build flashy tools, all vying for your attention. It’s tempting to mold business processes to fit into whatever tool the organization decided to buy and implement. This can be a big mistake.*

*Ultimately, technology is a tool. Just like you wouldn’t use a hammer to drive screws or a screwdriver to hammer in nails, you need the right tool for the job. In technology, it’s often more nuanced than hammers and screwdrivers. It’s in that minutia that there are opportunities to improve your business processes.”*<sup>19</sup>

The above reasoning applies equally to accounting research into AI. The current push into AI research by accountants is akin to a gold rush, where, to quote what is written above, “*it is easy to get swept up in the multitude of fantastic tools.*” This is precisely what happens in the normative AIS research discussed above, where the enthusiasm for applying AI to accounting transforms into trying to work on AI as a technology.

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<sup>19</sup> <https://advisicon.com/the-importance-of-developing-technology-agnostic-business-processes/>

In our opinion, a wiser course of action is to focus more on the impact of AI on accounting and less on AI as a technology. While that may seem contradictory to the role of AIS researchers, the caveat above is well said: “*It may sound strange for a company deeply engaged in the technical side of business to advocate for taking a non-technological approach to solving a problem. But sometimes, that's precisely the right thing to do.*”

We make the case for why technology agnosticism is prudent in AI research at this stage in the evolution of the technology by giving two examples, one from research and the second from practice, and they are just two from many other examples we could have chosen. They illustrate just how quickly AI is developing, which makes it advisable to be cautious in making arguments that are excessively dependent on the state of the technology at a given time.

## 2.1 O’Leary (2023)

O’Leary (2023) examined the accuracy of three AI products, including ChatGPT, undertaking something akin to penetration testing. He posed questions to the chatbots and then assessed how accurate their answers were, concluding that they sometimes gave correct and occasionally incorrect answers. The problem with O’Leary (2023) is that he never qualifies his findings with the caveat that these errors may be restricted to the version of the chatbots he used. Perhaps he also did not anticipate how quickly AI would improve, thus alleviating the shortcomings he found.<sup>20</sup>

For example, O’Leary (2023) identified the following mistake from the accounting domain when querying ChatGPT: “*Then I asked, 'Who invented REA accounting databases?' This is where I got an incorrect answer. I was expecting William McCarthy of Michigan State University. "The resources-event-agent (REA) model of accounting was developed by William J. Maher in the 1950s.*” As O’Leary (2023) points out, this is not just incorrect but seems to be an example of a “hallucination”, meaning an entirely invented answer, since he could not find records of any accounting scholar called William J. Maher even existing.

By contrast, when the same question is posed to a more recent version of ChatGPT, it responds with the correct answer:

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<sup>20</sup> Note that Dan O’Leary is a friend of the authors and cheerfully agreed to let us use his paper as an example. His paper was one of the earliest in AIS on AI and reflected the state of knowledge at the time.

**Prompt**

Who invented REA accounting databases?

**ChatGPT<sup>21</sup>**

The REA (Resources, Events, Agents) accounting model was invented by William E. McCarthy, a professor of accounting at Michigan State University. He introduced the REA model in the early 1980s as a way to improve accounting systems by focusing on the relationships between resources, events, and agents in business processes. McCarthy's REA model aimed to provide a more accurate and flexible way to represent accounting data, especially in terms of how resources flow through various business events and are affected by different agents involved in these processes. The REA model is often used in database design for accounting and enterprise systems.

The fact that its answer is so much better now than when O'Leary (2023) first queried ChatGPT demonstrates how AI improves as it ingests more data and the algorithms that underlie it advance. This can be seen from another error that O'Leary (2023) found using ChatGPT: “*I also asked ChatGPT a similar set of questions, but I will focus on the question “Who invented case-based reasoning?” ChatGPT’s response included the following. “Some of the key pioneers in this field include Hans K. G. Hvass, Kees van der Lugt, and Walter Daelemans, who developed some of the first CBR systems and established many of the fundamental principles of the approach.*

*I was expecting names such as Roger Schank, Janet Kolodner, and others. However, the system generated a different set of names. I did a quoted Google search and found no results for “Hans K. G. Hvass.” I also found that Hans Hvass had written a book, “Mammals Around the World.” In addition, I also found that “Kees van der Lugt” was not an AI researcher. However, the system portrays the results in such a convincing manner (e.g., multiple middle initials) that a non-skeptical user might accept the results. Clearly, correctness issues are important and can influence the long-term use of such systems.”*

Once again, though, ChatGPT today provides a different and more accurate answer to the same question:

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<sup>21</sup> Question posed to ChatGPT on 2/11/25.

### Prompt

Who invented case-based reasoning?

### ChatGPT<sup>22</sup>

Case-based reasoning (CBR) was introduced by Roger Schank and Robert Abelson in the early 1970s. They were both cognitive scientists who explored how humans use past experiences (or cases) to solve new problems. Schank and Abelson developed the concept as part of their research into how people remember and apply past experiences to decision-making and problem-solving. In CBR, a new problem is solved by finding a similar past case or experience and adapting the solution from that case to fit the current situation. Over time, CBR has become a prominent technique in artificial intelligence (AI) and knowledge-based systems.

## 2.2 Hallucinations

Turning to AI practice, the first thing that dented the initial burst of enthusiasm for ChatGPT was what came to be called “hallucinations”. IBM defines hallucinations in this context as arising when an AI system “*perceives patterns or objects that are nonexistent or imperceptible to human observers, creating outputs that are nonsensical or altogether inaccurate.*”<sup>23</sup> The tendency of ChatGPT to make up facts came to public attention with the unfortunate experience of the attorney Steven A. Schwartz. In March 2023, he used an AI program to prepare a filing to a Federal Court. His fatal flaw was failing to check whether ChatGPT cited real cases when, in fact, they were primarily made up.<sup>24</sup> Much attention was paid to this story in the press, and not least by accountants, given the importance of credibility in their profession.<sup>25</sup>

Computer scientists explained why ChatGPT acted this way and warned that it might be an intractable problem: “*ChatGPT, developed by OpenAI, recently shot to fame after Microsoft injected \$10 billion into the company. While its debut kicked off a sudden frenzy in AI stocks, it's also been met with judgement. Academics have warned that platforms like ChatGPT could print misinformation. For example, Insider's Samantha Delouya asked the language tool to write a news*

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<sup>22</sup> Question posed to ChatGPT on 2/11/25.

<sup>23</sup> <https://www.ibm.com/topics/ai-hallucinations>.

<sup>24</sup> <https://www.nytimes.com/2023/05/27/nyregion/avianca-airline-lawsuit-chatgpt.html>.

<sup>25</sup> <https://www.accountingtoday.com/opinion/dont-be-a-victim-of-ai-hallucinations>.

*story – and it spat out fake quotes from Jeep-maker Stellantis' CEO Carlos Tavares. Top voices including Mark Cuban have laid into the chatbot for that reason, saying the tool will only worsen misinformation. "Accuracy will continue to be a challenge for the next couple of years," Morgan Stanley's Kim said about ChatGPT.*<sup>26</sup>

Other computer scientists also expressed concern that hallucinations would remain a persistent shortcoming of AI: “*I don’t think that there’s any model today that doesn’t suffer from some hallucination,*” said Daniela Amodei, co-founder and president of Anthropic, maker of the chatbot Claude 2. “*They’re really just sort of designed to predict the next word,*” Amodei said. “*And so there will be some rate at which the model does that inaccurately.*”

*Anthropic, ChatGPT-maker OpenAI and other major developers of AI systems known as large language models say they’re working to make them more truthful. How long that will take — and whether they will ever be good enough to, say, safely dole out medical advice — remains to be seen.*

“*This isn’t fixable,*” said Emily Bender, a linguistics professor and director of the University of Washington’s Computational Linguistics Laboratory. “*It’s inherent in the mismatch between the technology and the proposed use cases.*”<sup>27</sup>

The Fortune article from which this quote comes was written on August 1, 2023. However, despite the pessimism it conveys from highly informed AI experts, consider the following from the marketing material for the AI product of Lexis Nexis, one of the world’s leading legal publishers, and one that is undoubtedly fully cognizant of the experiences of the hapless attorney Schwartz:

“*NEW YORK — LexisNexis® Legal & Professional, a leading global provider of information and analytics, today announced general availability of Lexis+ AI™ for U.S. customers, a generative AI solution designed to transform legal work. Lexis+ AI delivers trusted results in a familiar, easy-to-use interface with linked hallucination-free legal citations that*

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<sup>26</sup><https://markets.businessinsider.com/news/stocks/chatgpt-ai-mistakes-hallucinates-wrong-answers-edge-computing-morgan-stanley-2023-2>.

<sup>27</sup> <https://fortune.com/2023/08/01/can-ai-chatgpt-hallucinations-be-fixed-experts-doubt-altman-openai/>.

*combine the power of generative AI with proprietary LexisNexis search technology, Shepard's® Citations functionality, and authoritative content.*

*Developed with commercial preview users from leading global law firms, corporate legal departments, small law firms, and U.S. courts, Lexis+ AI answers are grounded in the world's largest repository of accurate and exclusive legal content from LexisNexis. Lexis+ AI provides comprehensive results in seconds versus minutes, making it multiple times faster than any other legal generative AI solution available today. The solution's AI capabilities were built internally at LexisNexis with world-leading tech partnerships, enabling the company to rapidly introduce new features and technology in a native environment and provide customers with a seamlessly integrated ecosystem.*

*Lewis+ AI is the only legal generative AI solution with citations linked in its responses, providing trusted legal results backed by verifiable authority. It minimizes the risk of invented content, or hallucinations, and checks all citations against Shepard's to ensure citation validation. The solution also offers users the ability to input specific citations to verify accuracy and flag when a citation might be wrong. Customers can give instant feedback within the product to continually improve product performance, content relevance, and overall product accuracy.”<sup>28</sup>*

Lewis Nexis issued this statement on October 23, 2023. Given the legal liability and reputational costs at stake, they wouldn't claim their product is “hallucination-free” unless they are confident, they have overcome this problem. Note that they are not claiming that AI will not hallucinate. Instead, they are using AI's own capabilities to verify results against a trusted database to detect hallucinatory results. Other companies also advertise their large language models (LLM) as hallucination-free. For example, Pinecone announced they had developed “*The first-ever LLM that never hallucinates—ever.*”<sup>29</sup> C3.ai also states that their product is hallucination-free, like many other new AI products.<sup>30</sup>

This outcome is in line with the argument made by Sam Altman, the CEO of OpenAI, the parent company of ChatGPT, that hallucinations would not remain a problem for long: “*I think we*

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<sup>28</sup> <https://www.lexisnexis.com/community/pressroom/b/news/posts/lexisnexis-launches-lexis-ai-a-generative-ai-solution-with-hallucination-free-linked-legal-citations>.

<sup>29</sup> <https://www.pinecone.io/blog/hallucination-free-lm/>.

<sup>30</sup> <https://c3.ai/why-c3-generative-ai/>.

*will get the hallucination problem to a much, much better place,” Altman said. “I think it will take us a year and a half, two years. Something like that. But at that point we won’t still talk about these.”<sup>31</sup>*

Has the problem of hallucinations in AI been solved for good? Probably not (Hicks, Humphries, and Slater, 2024), but that is not the point we are making.<sup>32</sup> Both these cases demonstrate why accounting researchers must proceed cautiously and avoid drawing sweeping conclusions when technology advances rapidly, especially when they are not the party responsible for that progress. The bottom line is that focusing on the shortcomings of AI at a given time can be a dead end for researchers other than the engineers tasked with solving that problem.

#### **4. The lessons from business process reengineering (BPR)**

Technology agnosticism is subject to the justifiable criticism that it only tells AIS researchers what not to do when undertaking AI research, rather than being a positive guide to achieving comparative advantage. To avoid the criticisms of merely being Luddites, we complement technology agnosticism with lessons from the widely used practice of **business process reengineering (BPR)**. We show that since being technology agnostic is inherent in BPR, it also provides a precedent for how AIS research into AI can be profitably undertaken.

In contrast to the excitement following the launch of ChatGPT, BPR was developed in a period of technological pessimism. Decades of investment in the newly emerging PCs and associated information technologies in the 1970s and 1980s had resulted in a seemingly slight improvement in worker productivity. In response, Hammer (1990) wrote one of the most influential business articles ever, with its famous title “Reengineering Work: Don’t Automate, Obliterate”:

*“Despite a decade or more of restructuring and downsizing, many U.S. companies are still unprepared to operate in the 1990s. In a time of rapidly changing technologies and ever-shorter product life cycles, product development often proceeds at a glacial pace. In an age of the*

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<sup>31</sup> <https://fortune.com/2023/08/01/can-ai-chatgpt-hallucinations-be-fixed-experts-doubt-altman-openai/>.

<sup>32</sup> Indeed, consider this headline from the New York Times from May 9, 2025: “A.I. Is Getting More Powerful, but Its Hallucinations Are Getting Worse”. <https://www.nytimes.com/2025/05/05/technology/ai-hallucinations-chatgpt-google.html>.

*customer, order fulfillment has high error rates and customer inquiries go unanswered for weeks. In a period when asset utilization is critical, inventory levels exceed many months of demand.*

*The usual methods for boosting performance—process rationalization and automation—haven't yielded the dramatic improvements companies need. In particular, heavy investments in information technology have delivered disappointing results—largely because companies tend to use technology to mechanize old ways of doing business. They leave the existing processes intact and use computers simply to speed them up.*

*But speeding up those processes cannot address their fundamental performance deficiencies. Many of our job designs, work flows, control mechanisms, and organizational structures came of age in a different competitive environment and before the advent of the computer. They are geared toward efficiency and control. Yet the watchwords of the new decade are innovation and speed, service and quality.*

*It is time to stop paving the cow paths. Instead of embedding outdated processes in silicon and software, we should obliterate them and start over. We should “reengineer” our businesses: use the power of modern information technology to radically redesign our business processes in order to achieve dramatic improvements in their performance.”*

The 1990s were characterized by a sudden and unexpected increase in US worker productivity to levels not seen since the halcyon days of the 1960s, and BPR was credited with much of this success.<sup>33</sup> “Not paving over cow paths” became the unofficial slogan of the numerous consultants who helped implement BPR in businesses, hospitals, the government sector, and other organizations worldwide.

The essence of BPR is that it reframes technology **as a means and not an end** by asking: “What would our business processes look like if we built them for the first time today, taking advantage of the capabilities offered by the latest technology?” This perspective leads to a fundamental rethinking of business processes, which would not have occurred if we had asked instead, “How should we add the latest technology into our existing business process?” The latter

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<sup>33</sup> <https://www.bls.gov/opub/mlr/2021/article/the-us-productivity-slowdown-the-economy-wide-and-industry-level-analysis.htm>.

approach results in only marginal changes to the status quo and fails to capture the true transformative power of new technology.

This is where technology agnosticism complements BPR. Being technology agnostic towards AI in a BPR framework when conducting accounting research means reframing it as a means and not an end by asking: “What would our accounting processes look like if we built them for the first time today, taking advantage of the capabilities offered by AI?” This is contrasted with asking, “How should we add AI into our existing accounting process?”

Examples of the latter approach include AIS research that advocates replacing some aspects of an existing accounting process with AI, such as using it for audit analytics or bankruptcy prediction. While all applications of AI are subject to revision as the capabilities of AI improve, the BPR approach focuses on the purpose of the process rather than on how to achieve the process using technology. The reason why the process exists (When are accounting disclosures not accurate? How do we assess whether the firm is a going concern?) is less dependent upon the capabilities of the technology at a given time than the application of its current version to the process (Can AI be used to find outliers or calculate an Altman’s Z-score?). Any specific application of AI is more likely to risk obsolescence before the paper appears in print.

In the foreseeable future, AI’s capabilities will improve at a faster rate than that of humans, and so will their ability to deal with change. Hence, accounting researchers face less risk from researching topics on the interaction between accountants and AI than from applications to accounting practice of the current versions of AI.

Combining technology agnosticism with lessons from BPR improves the odds of accounting researchers obtaining a comparative advantage for two reasons. First, it exploits their expertise in accounting processes and the role of behavior in them. Second, it gives them an approach towards AI with a proven track record, whereas others implementing AI do not follow such a systematic approach. The initial reaction by most businesses (and researchers) to any new technology is to jump into it to obtain the credit of being the first to do so. The greater the buzz around the latest technology, the greater the incentive to be amongst the first to publish a paper on it, the equivalent in business of being the first to bring a new product to the market. However, that strategy is biased toward applying AI to an existing process, which is the antithesis of BPR.

Using technology agnosticism and BPR, in the following section, we present two examples of the kind of AIS research into AI that we believe are more likely to result in a sustained comparative advantage. The first is a general question about AI's behavioral impact, and the other is a specific application of this broader issue to accounting practice.

## 5. Is AI a Tool or a Substitute?

Redesigning a business process to take advantage of AI is not a function of technology alone but of a complex relationship between humans and software. There is the human aspect, the technology aspect, and how the former engages with the latter. To be technology agnostic means focusing less on the strengths and weaknesses of the second aspect—seeing it as too rapidly evolving at the beginning of the development cycle to draw persistent conclusions—and instead examining those facets of human behavior and the resulting interaction with technology that is likely to remain relevant even as the technology's capabilities improve.

What are the behavioral issues that arise with AI? There are undoubtedly many, some of which will probably not become apparent until AI is more widely used. Moreover, it is not necessarily the comparative advantage of accounting researchers to examine all aspects of this issue, given that they generally lack training in psychology, ethics, and human-machine interaction. On the other hand, today, accounting researchers don't need to rely only on their training to begin exploring this question; they can ask AI instead. That is what we did, and here is how ChatGPT responded:

**Prompt**

What are the behavioral issues that arise with AI?

**ChatGPT<sup>34</sup>**

Behavioral issues in AI arise from both the design of the system and its interaction with users, leading to unintended consequences. Some of the main concerns include:

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<sup>34</sup> Asked of the free version of ChatGPT on 2/11/25.

1. Bias and Discrimination: AI systems can reflect the biases present in the data they're trained on, leading to unfair or discriminatory outcomes. For example, facial recognition technology has been shown to have racial and gender biases, leading to inaccurate results for some demographic groups.
2. Lack of Transparency (Black Box Problem): Many AI models, particularly deep learning networks, are often described as "black boxes," meaning their decision-making processes are not easily understandable. This can make it difficult for users to trust AI's outputs or to hold systems accountable when things go wrong.
3. Autonomy and Accountability: As AI systems become more autonomous, it becomes harder to assign responsibility when something goes wrong. If an AI makes a decision that causes harm, it's often unclear whether the blame falls on the AI, the developers, or the operators.
4. Ethical Dilemmas: AI systems are increasingly being used in sensitive areas like healthcare, law enforcement, and finance. Decisions made by AI, such as recommending treatments or predicting criminal behavior, raise important ethical questions about privacy, consent, and fairness.
5. Manipulation and Deception: AI is sometimes used to manipulate human behavior through targeted content (like in social media or advertising). AI-driven bots or deepfakes can deceive people into believing false information, undermining trust in media and social platforms.
6. Over-reliance and De-skilling: There's a concern that as people become more reliant on AI systems, they may lose the skills to perform certain tasks independently. Over-reliance on AI could lead to a loss of human expertise, making critical decision-making vulnerable to errors or system failures.
7. Unintended Consequences: AI systems can behave in unexpected ways, particularly when operating in complex or dynamic environments. For example, an AI optimized to maximize profits might adopt unethical strategies, or a self-driving car could make decisions that prioritize the safety of its occupants over pedestrians.
8. Privacy Invasion: AI systems often require large amounts of data, raising concerns about how personal information is collected, stored, and used. The behavior of AI in the context of data privacy—such as surveillance or profiling—can undermine individuals' rights to privacy.
9. Human-AI Interaction Issues: When AI systems interact with humans, they may cause frustration or confusion due to poor communication or lack of empathy. If an AI system doesn't

respond in a human-understandable way, users might struggle to use it effectively or trust its outputs.

10. Lack of Emotional Intelligence: AI lacks true empathy and emotional intelligence, which means it can fail to understand or appropriately respond to emotional cues. This could be problematic in areas like customer service, healthcare, or any other context where human emotions are involved.

11. Job Displacement and Socioeconomic Impact: AI's ability to automate tasks raises concerns about the displacement of human workers. As AI systems become more capable, there is a risk of job loss and growing inequality, as workers in lower-skilled positions might be most affected by automation.

This impressively comprehensive answer is an excellent starting point for examining the various behavioral issues that arise with AI. Of course, we did not ask ChatGPT this question because we intended to pursue its answer. Instead, it illustrates the fundamental question we wish to pose: When someone turns to AI, what role do they intend the AI to play? That is a critical issue in how AI is used, the reliance users place on its outcome, and, fundamentally, the basis of trust in the AI system.

To make these questions concrete, consider the question of liability for doctors who use AI in their medical practice. That is an unresolved concern for many other professions, including accounting and auditing. For example, court cases are already ongoing on who is held responsible when a Tesla automobile in its self-driving “autopilot” mode strikes and kills another road user.<sup>35</sup>

As discussed in a 2024 Politico article, lawyers say that the best way for doctors—and, by extension, accountants or anybody else in the same position—to avoid legal liability in their use of AI is for them to use it as a means to help them make a better decision as opposed to having AI make decisions for them (emphasis added): “*We’re using AI like a stethoscope,*” said John Couris, president and CEO of the Florida Health Sciences Center, emphasizing the need to balance excitement about the technology with level-headedness. “***It’s a tool to help augment the care that***

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<sup>35</sup> <https://electrek.co/2024/03/11/tesla-crash-autopilot-trial-but-new-evidence/>.

*they're providing, but our doctors and our nurses are the ultimate authority on what gets done or doesn't get done to a patient.*"<sup>36</sup>

*Other health providers aren't as calm, including Dr. Wendy Dean, president and co-founder of Moral Injury of Healthcare, an organization that advocates for physicians' well-being. "The confidence with which AI posits its conclusions," she said, "makes it really hard as a human to say, 'Wait a minute, I need to question this.'*"

Contrast this debate about AI with earlier medical technologies, such as those used for imaging. CT and MRI scans do the same task as standard X-ray machines, allowing doctors to visualize what is beneath the skin. However, rather than the latest technology replacing the previous one, there are carefully designed protocols for the use of each based on which approach is best for the patient.<sup>37</sup> For example, CT scans provide more detail than a standard X-ray, but they take longer, require more expensive equipment, and expose the patient to a more significant radiation dose. Hence, a CT is used after a serious motor vehicle accident but not for routine dental imaging.<sup>38</sup>

Why have doctors not used the same considered approach with AI? Perhaps because, as Dr. Dean laments, limiting how AI is used is easier said than done. What distinguishes the current generation of AI from prior ones, such as expert systems, is that they are built on large language models. These are programs that users converse with, first in writing and now verbally, as opposed to programs using stilted, formalized code. In other words, they are designed to mimic how human users talk and think so that the interface between humans and technology becomes as seamless as possible.

Consider this example from the AI company C3.ai, which claims that "*users can find the critical information they are looking for across the ocean of data siloed in disparate applications, data stores, and information systems. This new paradigm also transforms the human-computer interaction model for enterprise users. Instead of reviewing complex BI dashboards and looking at old-fashioned forms and tables of data, users can ask human interpretable questions, such as*

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<sup>36</sup> <https://www.politico.com/news/2024/03/24/who-pays-when-your-doctors-ai-goes-rogue-00148447>. Emphasis added.

<sup>37</sup> <https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/ct-vs-mri-vs-xray>.

<sup>38</sup> <https://www.nytimes.com/2025/01/21/well/dental-x-ray-health-risks.html>.

*“What is the remaining inventory in our Southern France distribution center?” and receive fast, direct answers to their question.”*<sup>39</sup>

It is easier to ask a question as one would do with a colleague rather than undertake the laborious analysis necessary to answer it for yourself using “old-fashioned forms”. However, when all you do is ask AI, who takes responsibility for the answer? When will relying on the AI system become acceptable without double-checking the results? Moreover, when that happens, is AI or the individual who is the *“ultimate authority on what gets done or doesn’t get done”*?

The mimicking of human conversation makes LLM-based generative AI fundamentally different from earlier expert systems, let alone other technologies relied on by accountants such as Excel, Power BI, and SAP. Those programs are tools that make it easier for accountants to perform specific tasks, but do not substitute for their essential role in analyzing the results and reaching a conclusion.

By contrast, Mei, Xie, Yuan, and Jackson (2024) report that version 4 of ChatGPT successfully passed the benchmark Turing test, meaning that a blindfolded human could not tell whether they were interacting with a machine or another human. Indeed, the later version 4o can even flirt and joke with users: *“All this adds up to a much different subjective experience. If using previous A.I. assistants felt like talking to a dispassionate librarian, the new ChatGPT feels like a friendly, chatty co-worker.”*<sup>40</sup> Since they are consciously designed to mimic being a human partner, even a companion, who can blame a user for accepting them on those terms?

The prospect of AI becoming human-like has been the subject of numerous depictions in novels and movies, from HAL in Stanley Kubrick’s prescient 2001 to Blade Runner and Ex Machina. These may be science fiction, but in real life, Microsoft engineers speculated that their AI system showed signs of consciousness.<sup>41</sup> By contrast, no one has ever flirted with Excel or cracked jokes with Robotic Process Automation (RPA).

This ability of AI to simulate human behavior is, in our opinion, one of the fundamental behavioral challenges that AI poses—and one that will be exacerbated as technological advances

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<sup>39</sup> <https://c3.ai/blog/generative-ais-transformative-potential-for-the-enterprise/>.

<sup>40</sup> <https://www.nytimes.com/2024/05/14/technology/ai-chatgpt-her-movie.html>.

<sup>41</sup> <https://www.nytimes.com/2023/05/16/technology/microsoft-ai-human-reasoning.html>.

make imitation even better. This unique aspect of AI makes it extremely difficult to prevent AI from transforming from a tool helping humans make better decisions to substituting for humans altogether. In the former case, the user perceives AI to be no more than a better stethoscope for a doctor or a better spreadsheet for an accountant. In the latter situation, though, AI replaces the human user, either in total or in part, as the user offloads a portion of responsibility for the outcome to the technology. In practice, that distinction between AI as a tool and AI as a substitute is increasingly becoming a slippery slope rather than a Chinese Wall.<sup>42</sup>

Consider the use of AI, which we began this section with. When we asked ChatGPT about what behavioral issues arise with AI, if we had researched further on our own, its suggestions would serve only as a tool. On the other hand, it is a substitute if we pass off its answer as our own. With AI now built into every software product, laptop, and mobile phone, it will become ever more challenging to separate the user's input from that of AI.

Whether AI remains a tool or transitions to an ever-increasing role in the outcome depends upon our intentions and view of our actions. Consider what happens if we persist in asking ChatGPT itself for more information (**Prompt:** Please expand upon "*AI systems can reflect the biases present in the data they're trained on, leading to unfair or discriminatory outcomes.*"). It might be argued that we take responsibility for the process when we ask ChatGPT follow-up questions. On the other hand, ChatGPT's responses to our questions will shape what subsequent questions we ask, so who is really in charge of this process?

Moreover, how would anyone know whether we "only" used AI as a tool or veered into AI as a substitute for our input? Indeed, numerous commercial products claim that they enable a user to write an entire book in a matter of days.<sup>43</sup> Moreover, if someone turned to ChatGPT in the first place because they lacked subject knowledge, then what choice do they have but to accept its answer as correct? After all, how many of us question the answers we obtain from Wikipedia, Google, or even, back in the day, the encyclopedia on the library shelf?

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<sup>42</sup> For example, due to a brain freeze, one of the authors of this paper had initially written "slippery slide" in this sentence. Grammarly®, which uses a relatively primitive form of AI, correctly suggested substituting "slope" instead, demonstrating an impressive level of contextual understanding of the sentence's intended meaning.

<sup>43</sup> For example, <https://www.squibbler.io/ai-book-writer> and <https://dibbly.com/create/>,

We already see AI being used as a substitute by our students in our classrooms, who use AI to do class assignments instead of doing them themselves.<sup>44</sup> While students may get away with using AI as a substitute for doing the work themselves, in the real world, that is a recipe for the outright replacement of the human worker with AI. Goldman Sachs suggested that the equivalent of 300 million jobs could be replaced by AI in the foreseeable future, including a quarter of all work tasks in Europe and the USA.<sup>45</sup> The IMF predicts an even bleaker outcome: “*In advanced economies, about 60 percent of jobs may be impacted by AI. Roughly half the exposed jobs may benefit from AI integration, enhancing productivity. For the other half, AI applications may execute key tasks currently performed by humans, which could lower labor demand, leading to lower wages and reduced hiring. In the most extreme cases, some of these jobs may disappear.*”<sup>46</sup>

There are numerous such studies about the potential impact of AI on future employment by many august institutions. However, the reality is that no one knows what will happen because of uncertainty about how rapidly the capabilities of AI will evolve and in what way.

The discussion in this section is only one example of technology-agnostic research on AI. Prompted by a POLITICO article, we pursued an analysis that led to a topic that could be the subject of an entire research program: whether the inherent characteristics of LLM-based AI mean that it is not treated as a tool like previous technologies, such as Excel, but instead becomes a substitute for human judgment. Examining the specific applications of this question for accounting practice is an obvious next step in this research program.

### **The Behavioral Impact of AI on Accounting Practice**

Dell'Acqua et al (2023) examined the effect of using AI by Boston Consulting Group consultants, employees similar in skill and aptitude to the highly educated workforce found in the Big 4. What was striking about their results was not that AI improved worker productivity—

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<sup>44</sup> This is such a pressing concern that one of the authors attended a presentation at the 2023 American Accounting Association annual meeting by an accounting textbook publisher where they announced that future editions will include some chapter problems that will present data visually rather than in tabular form to make it harder for students to copy the data into AI and solve the problem that way. The only problem, as many participants at the panel noted, is that the capability of the AI is improving so fast that by the time the new editions of the textbooks appear, the AI programs will also be able to ingest data presented visually. This is yet another example where being technology agnostic might have been a wiser course of action.

<sup>45</sup> <https://www.bbc.com/news/technology-65102150>.

<sup>46</sup> <https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity>.

something which few would find surprising—but that it had the most significant effect on the productivity of the relatively less capable workers: “*The GPT-only participants saw a 38% increase in performance compared with the control condition (no access to AI), while the performance of those who were provided with both GPT and an overview saw a 42.5% increase in performance compared with the control condition. Interestingly, the researchers observed a bigger jump in performance scores for the participants in the lower half of assessed skills who used GPT-4 compared with those in the top half of assessed skills — at 43% and 17%, respectively — when they were compared with their baseline scores (i.e., no AI use).*”<sup>47</sup>

If the effect found by Dell'Acqua et al (2023) generalizes, it has significant implications for the impact of AI on the future accounting workforce. Will, for example, the Big 4 use less skilled, and hence, less well-paid, workers partnered with AI as a substitute for higher-skilled and higher-paid workers? They would no doubt strenuously object to this argument. Still, the same logic resulted in the decades-long process by the Big 4 of outsourcing work previously done by US-based accountants to workers in countries like India. Conversely, we have heard arguments that AI will enable the repatriation of some outsourced accounting jobs because that work is the easiest to automate. Either way, the result is a reduction in total employment.

These are just some issues that accounting researchers can investigate and advise the profession on. While the degree of effectiveness of AI as either a tool or a substitute for human employees in accounting firms depends on AI technology capabilities, many fundamental technology-agnostic issues remain.

All the big 4 are investing billions in new AI technology and training their workers to apply it. KPMG announced that “*Training KPMG’s army of accountants and business consultants to use generative AI has been a top focus of the firm. The company wants those professionals to serve as ambassadors of the technology, demonstrating how it could be used and knowledgeable enough to answer clients’ questions... One of the challenges is developing training courses that keep pace with the technology’s rapid development. “The tech can change faster than the people can change,” [Steve Chase, vice chair of AI and digital innovation for KPMG US] said. He predicts that AI skills will become a necessity for workers from accountants to coders to master to remain*

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<sup>47</sup> <https://mitsloan.mit.edu/ideas-made-to-matter/how-generative-ai-can-boost-highly-skilled-workers-productivity>.

*competitive in the labor market.*<sup>48</sup> Needless to say, the other Big 4 firms are giving AI the same priority, with PWC investing at least \$1 billion and EY spending \$1.4 billion, which includes creating its proprietary version of ChatGPT.

The primary focus of AI initiatives in the Big 4 is advisory services, but they all see a significant role for AI in assurance, too. KPMG says, “*AI is set to revolutionize financial reporting and audit, with many financial reporting functions adopting AI and generative AI. KPMG has formed alliances with major tech companies to develop innovative AI solutions and is investing heavily in embedding AI capabilities throughout its business to transform the audit.*”<sup>49</sup>

PwC announced that “*PwC was awarded the 2023 ‘Digital Innovation of the Year Award’ at the 12th annual International Accounting Forum & Awards in London, June 29, for its suite of global AI services in support of its global auditors. PwC’s award submission, entitled: “Next generation AI services for the next generation auditor,” focuses on PwC’s industry breakthrough capabilities like predictive analytics and AI-assisted financial statement disclosure checking, as well as capabilities exploring the potential of generative AI.*”<sup>50</sup>

The July 2024 Staff Update from the PCAOB on its outreach to the audit firms it supervises regarding their use of generative AI summarizes their finding that “*the firms that are investing in GenAI-enabled tools indicated that they expect GenAI to augment, but not replace, humans in auditing or in financial reporting. In their view, human involvement remains essential for auditors and preparers and is needed to review the output from GenAI.*”<sup>51</sup> This seems to imply AI as a tool rather than a substitute, but it is still in the early days of incorporating AI into the audit function.

When KPMG says that generative AI will “augment the workforce”, do they mean that it is a tool or a substitute? EY also writes that they wish to “augment people's potential” and “create a future where seamless people-AI collaboration achieves extraordinary outcomes”.<sup>52</sup> PwC advertises “Next generation AI services for the next generation auditor”, but who, precisely, do they have in mind as the next generation auditor? Deloitte has a similar message, stating that they

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<sup>48</sup> <https://news.bloombergtax.com/financial-accounting/kpmg-envisioned-ai-as-part-of-every-job-in-its-global-workforce>.

<sup>49</sup> <https://kpmg.com/us/en/media/news/ai-in-audit-kpmg-2023.html>.

<sup>50</sup> <https://www.pwc.com/jp/en/press-room/next-generation-ai-award230721.html>.

<sup>51</sup> <https://pcaobus.org/documents/generative-ai-spotlight.pdf>.

<sup>52</sup> [https://www.ey.com/en\\_us/services/ai/platform](https://www.ey.com/en_us/services/ai/platform).

are “*Advancing AI Innovation and human-machine collaboration: The Age of With™ is upon us. It’s a world where humans work with machines to enable far greater outcomes.*”<sup>53</sup>

The Big 4 are not technology agnostic when implementing AI. However, those same investments that the Big 4 are putting into AI make it even more advisable for accounting researchers to be technology agnostic. While there may be a difference between what they promise and what they deliver, it is also the case that many of the capabilities of Big 4 AI systems are proprietary and, hence, likely to be unknowable to accounting researchers. That is why we advocate focusing on the behavioral effects of AI as a tool or substitute in accounting practice rather than on specific applications of current versions of AI. And by writing about the Big 4 in the USA, we are not suggesting that they are the only ones implementing AI to accounting practice. The Chartered Accountants of India, for instance, have launched their own comprehensive LLM-based AI tool for Indian accountants called CA GPT.<sup>54</sup>

How will the application of AI change accounting work processes? A common argument for AI is that it will rid workers of tedious, so-called “grunt” work: “*There are jokes among junior bankers that the most common tasks of the job involve dragging icons from one side of a document to another, only to be asked to replace the icon over and again. “One hundred percent drudgery and boring,” said Gabriel Stengel, a former banking analyst who left the industry two years ago. Val Srinivas, a senior researcher for banking at Deloitte, said a lot of the work involved “gathering material, poring through it and putting it through a different format.” “A.I. will enable us to do tasks that take 10 hours in 10 seconds,” said Jay Horine, co-head of investment banking at JPMorgan, describing analyst jobs. “My hope and belief is it will allow the job to be more interesting.”*<sup>55</sup>

The blog AccountancyAge.com predicts a similar transformation in accounting, with this enthusiastic description of what AI will accomplish in auditing: “*Auditing financial statements is a bit like trying to put together a jigsaw puzzle blindfolded. Without the critical clues provided by audit schedules, auditors face an uphill battle in verifying accuracy and sniffing out errors. Yet*

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<sup>53</sup> <https://www2.deloitte.com/us/en/pages/deloitte-analytics/solutions/analytics-ai.html>.

<sup>54</sup> <https://prokhata.com/ca-gpt-the-ai-revolution-for-chartered-accountants-has-arrived/>.

<sup>55</sup> <https://www.nytimes.com/2024/04/10/business/investment-banking-jobs-artificial-intelligence.html>.

*the process of manually creating these complex schedules has scarcely changed over the past century, demanding tedious effort and keeping auditors shackled to their desks.*

*Auditors have long relied on nothing more than spreadsheets, stubby pencils, and repetitive procedures to schedule their audits. Now, they stand at the vanguard of a new technological revolution driven by artificial intelligence that threatens to shake up the stodgy world of auditing. As AI capabilities rapidly advance, auditors finally have an opportunity to entrust the tiresome task of preparing audit schedules to intelligent algorithms and automation.*

*By harnessing the number-crunching might and efficiency of AI, firms can liberate their auditors from the grunt work of structuring schedules and redirect their energy towards value-adding audit testing and analysis. Savvy managers are already realizing the potential for audit software bots to provide the clues auditors need to evaluate financial statements while simultaneously enhancing effectiveness and precision.<sup>56</sup>*

There is, though, a fundamental problem with this optimistic scenario. The current way accountants (and doctors, translators, and financial analysts...) are trained is that they first spend years doing that same grunt work that is so often criticized. Only once they have thus “learned the ropes” are they trusted to work on more sophisticated tasks, first under close supervision, and then they are gradually allowed to work independently after they have proven their capabilities. What happens when AI eliminates the first part of this multi-year apprenticeship process? Are auditors fresh out of college to be asked to “sniff out errors” or engage in client relations? It is naive to say that AI will enable workers to concentrate on doing more interesting and value-adding activities. The reality is that few would trust a brand-new hire straight out of college with such responsibilities. So, what are they supposed to do instead?

In Wall Street, the use of AI is predicted to result in a dramatic reduction in the number of interns and junior analysts hired, the traditional first rung in a finance career: “... *investment banks, long inured to cultural change, are rapidly turning into Exhibit A on how the new technology could not only supplement but supplant entire ranks of workers. The jobs most immediately at risk are those performed by analysts at the bottom rung of the investment banking business, who put in endless hours to learn the building blocks of corporate finance, including the intricacies of*

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<sup>56</sup> <https://www.accountancyage.com/2024/02/12/290792/>.

*mergers, public offerings and bond deals. Now, A.I. can do much of that work speedily and with considerably less whining.*

*“The structure of these jobs has remained largely unchanged at least for a decade,” said Julia Dhar, head of BCG’s Behavioral Science Lab and a consultant to major banks experimenting with A.I. The inevitable question, as she put it, is “do you need fewer analysts?”*

*Some of Wall Street’s major banks are asking the same question, as they test A.I. tools that can largely replace their armies of analysts by performing in seconds the work that now takes hours, or a whole weekend. The software, being deployed inside banks under code names such as “Socrates,” is likely not only to change the arc of a Wall Street career, but also to essentially nullify the need to hire thousands of new college graduates.*

*Top executives at Goldman Sachs, Morgan Stanley and other banks are debating how deep they can cut their incoming analyst classes, according to several people involved in the ongoing discussions. Some inside those banks and others have suggested they could cut back on their hiring of junior investment banking analysts by as much as two-thirds, and slash the pay of those they do hire, on the grounds that the jobs won’t be as taxing as before.”<sup>57</sup>*

Will accounting firms follow this pattern of reducing the number of inexperienced hires? Can they resist the temptation to do so when, in the short run, there will be few consequences given the productivity boost that AI will give to current employees? The challenge will come down the road when fewer candidates exist to advance to the manager and senior manager positions. Such a strategy will make sense, however, if the belief is that the increasing capability of AI will result in a reduced need for employees at all levels, in the same way that the emergence of the automobile meant that there was less need for both new carriage drivers and experienced ones, too.

Aneesh Raman, the chief economic opportunity officer at LinkedIn, recently wrote that *“There are growing signs that artificial intelligence poses a real threat to a substantial number of the jobs that normally serve as the first step for each new generation of young workers... Unless employers want to find themselves without enough people to fill leadership posts down the road, they need to continue to hire young workers. But they need to redesign entry-level jobs that give*

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<sup>57</sup> <https://www.nytimes.com/2024/04/10/business/investment-banking-jobs-artificial-intelligence.html>.

*workers higher-level tasks that add value beyond what can be produced by AI.”<sup>58</sup>* Interestingly, one example of one such redesign he gives is from accounting: “*At the accounting and consulting firm KPMG, recent graduates are now handling tax assignments that used to be reserved for employees with three or more years of experience, thanks to A.I. tools.*” As accounting instructors, our first reaction is to ask how many of our own students could handle such advanced work immediately upon graduation or would be willing to assume such responsibility. The top students would be eager for this opportunity, but many in the rest of the distribution would be overwhelmed unless AI literally held their hand and told them what to do. In any case, here is an example of research that is well within the comparative advantage of AIS researchers.

In December 2023, which is a lifetime ago in the AI field, KPMG and PWC were cited in a Bloomberg article titled “Consulting Giants See AI Shaving Years Off the Path to Partner”.<sup>59</sup> By contrast, in the 2024 American Accounting Association annual meeting, an EY partner answered in response to a question posed by one of the authors of this paper about the effect of AI on the traditional career path in accounting firms, that they were aware of the problem and were still trying to figure out what to do about it. Researching these kinds of issues is where the comparative advantage of accounting researchers should lie when it comes to AI.

Addressing the long-term employment patterns in the accounting industry will be a more significant challenge than investing in AI by buying the latest technology from vendors (as PwC did, for example, by partnering with ChatGPT founder OpenAI). We note, however, that this issue is not entirely technology agnostic since the number needed and the role played by human employees will be highly dependent on what capabilities AI will possess in a decade from now.

Deskilling in accounting has long been studied by researchers, who are now extending their analysis to the implications of AI (Sutton, Arnold, and Holt, 2023). Arnold et. al. (2023) put forward the use of AI to help avoid deskilling, but that assumes that the workers are there to train in the first place.

## 7. Do published AI papers demonstrate comparative advantage?

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<sup>58</sup> <https://www.nytimes.com/2025/05/19/opinion/linkedin-ai-entry-level-jobs.html>.

<sup>59</sup> <https://www.bloomberg.com/news/articles/2023-12-04/ai-could-shave-years-off-path-to-partner-at-law-firms-big-four?rref=x4yxaySR>.

Given that the launch of ChatGPT took place over two years ago, the first set of AI-related papers is now beginning to appear in accounting journals. The fact that they are worthy of being accepted is not one that we question. Our interest is in assessing them against the comparative advantage test proposed in this paper. Comparative advantage is established if a paper satisfies the following criteria:

1. The paper does not replicate research into AI already being undertaken by competitors in the AI ecosystem.
2. The paper does not risk obsolescence by focusing on shortcomings or limitations of AI that will likely be remedied by the time the paper is published.

We searched the online indexes of the six accounting journals in the FT50 list and the three leading AIS journals, the Journal of Emerging Technologies in Accounting (JETA), the International Journal of Accounting Information Systems (IJAIS), and the Journal of Information Systems (JIS), for any paper that mentioned “ChatGPT” or “LLM” in its title, abstract, or keywords (as opposed to the more generic “AI”, a term whose use predates the latest generation of large language models).<sup>60</sup> Conducting our search in April 2025, we found 17 papers (see Table 1)<sup>61</sup>. Considering the typical multi-year submission-to-publication cycle and considering that ChatGPT was initially released on November 30, 2022, we opine that journal editors evidently felt it essential to push papers on this hot topic through the process as quickly as possible.

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<sup>60</sup> FT50 Accounting Journals: *The Accounting Review*, *Journal of Accounting Research*, *Journal of Accounting and Economics*, *Accounting, Organizations and Society*, *Review of Accounting Studies*, *Contemporary Accounting Research*.

<sup>61</sup> While we focused on LLM-related papers in top-rated accounting journals, for a deeper search see Dong, Stratopoulos, and Wang (2024) that also includes papers in SSRN and those that predate Chat GPT. For an even broader AI search that goes back to 1990, see Murphy, Feeney, Rosati, and Lynn (2024).

**Table 1. Accounting-related LLM Literature (up to spring 2025)**

	<b>Research Topic</b>	<b>Authors</b>	<b>Research Methodology</b>	<b>Journal</b>	<b>Date</b>
1	Internal audit	Emett, Eulerich, Lipinski, Prien, and Wood	Interviewing internal auditors at Uniper SE (a German energy company)	Accounting Horizons (AH)	Early access: August 2024
2	Accounting profession	Ross and Zhang	Surveying 136 practitioners and interviewing 2 experts regarding LLM	AH	Early access: August 2024
3	LLM publications and working papers	Dong, Stratopoulos, and Wang	Synthesizing 264 related papers from SSRN from January 2022 to March 2024	International Journal of Accounting Information Systems (IJAIS)	Online: October 2024
4	Accounting-related AI literature	Murphy, Feeney, Rosati, and Lynn	Synthesizing 930 AI-related articles from 1990 to 2023	IJAIS	Online: September 2024
5	Financial auditing	Lombardi, Kim, and Vasarhelyi	Delphi study with a panel of 19 industry experts role of advanced technology (including AI)	IJAIS	Early access: January 2025
6	Financial auditing	Kokina, Blanchette, Davenport, and Pachamanova	Interviewing 22 experienced audit professionals regarding challenges and opportunities for AI in auditing	IJAIS	Early access: January 2025
7	Investment decisions	Downen, Kim, and Lee	2x2 research design with 297 graduate students regarding the influence of AI in investment decision	IJAIS	Early access: December 2023
8	Relationship between AI and deskilling	Sutton, Arnold, and Holt	Theoretical discussion proposing an extension of theory of technology dominance to explore the relationship between AI and deskilling	IJAIS	Available online: May 2023
9	Financial auditing	Gu, Schreyer, Moffitt, and Vasarhelyi	Exploring AI co-piloted auditing by testing ChatGPT for three audit tasks,	IJAIS	Published: September 2024

			namely financial ratio analysis, text mining, and journal entry testing.		
10	One-month ChatGPT ban in Italy	Bertomeu, Lin, Liu, and Ni	Use text analysis to explore linguistic cues from financial analysts reports before, during, and after the one-month ChatGPT ban	Journal of Accounting and Economics (JAE)	Accepted: February 2025
11	The contextuality of accounting numbers	Kim and Nikolaev	Using LLM and artificial neural network to explore the degree of interactions between numeric and textual information in financial statements	Journal of Accounting Research (JAR)	Accepted: 2024
12	Federal income taxes	Antinozzi and Cooper	Researchers asked ChatGPT 111 tax FAQs from the IRS to test the accuracy of ChatGPT-based tax information	Journal of Emerging Technologies in Accounting (JETA)	Early access: February 2025
13	Different LLM utilization methodologies	Li and Vasarhelyi	Explore how LLMs, through different implementation methods, including user interface (UI), application programming interface (API), and RPA, can be effectively applied in accounting research and practices based on extracting unstructured data from financial statements.	JETA	Published: Fall 2024
14	Impact of JETA publications	Cong and Du	Used LLM to analyze each article in the OpenAlex database that cited JETA	JETA	Published: Fall 2024
15	Accounting education and research	Vasarhelyi, Moffitt, Stewart, and Sunderland	[Commentary] Authors' opinions on the potential benefits and pitfalls of LLM in accounting education and research and professional auditing. Includes LLM examples.	JETA	Published: Fall 2023

16	Accounting profession	Boritz and Stratopoulos	[Commentary] Synthesize online workshop discussions regarding AI and the accounting profession and related research opportunities.	Journal of Information Systems (JIS)	Published: Fall 2023
17	Accounting certification exams	Eulerich, Sanatizadeh, Vakilzadeh, and Wood	ChatGPT took and passed the Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Internal Auditor (CIA), and Enrolled Agent (EA) certification exams.	Review of Accounting Studies (RAS)	Published online: June 2024

Looking at the Research Topic and Research Methodology columns in Table 1, the authors focused on their competitive advantages by focusing on financial audit, internal audit, financial accounting, and taxes. It would take this paper too far afield to attempt to review all 17 publications to assess how well they achieve a comparative advantage over the broader AI literature. We shall leave that task for another time and restrict our detailed analysis to the three papers accepted at JETA, the AIS journal that specializes in research on emerging technologies. These three papers are Vasarhelyi, Moffitt, Stewart, and Sunderland (2023), Li and Vasarhelyi (2024), and Antinozzi and Cooper (2025).<sup>62</sup> We also comment on Eulerich, Sanatizadeh, Vakilzadeh, and Wood (2024), an AI paper published in an FT50 accounting journal by AIS researchers, as a paper that demonstrates how comparative advantage can be achieved.

Vasarhelyi, Moffitt, Stewart, and Sunderland (2023), a commentary paper titled “Large Language Models: An Emerging Technology in Accounting,” was submitted and accepted in August 2023, just nine months after the launch of ChatGPT. Serving as an introduction to what was, at the time it was written, a new and novel technology, the paper’s objective is to explain “*how large language models like ChatGPT hold transformative potential in accounting, including education, research, and professional auditing.*”

One of the strategies that Alles, Kogan, and Vasarhelyi (2008) suggest for AIS researchers seeking to establish their comparative advantage is what they call “**Knowledge transfer: bringing into AIS developments in related areas that might otherwise escape the attention of more narrowly focused practitioners, exploiting the lower opportunity cost for academics to scan and learn about related academic fields.**” Vasarhelyi, Moffitt, Stewart, and Sunderland (2023) is a prime example of applying this strategy.

Their paper explains what LLM models are, what they can do using examples relevant to accounting (such as creating an audit program for a brake manufacturer concerned with asbestos liability), and the limitations of the LLM models available when the paper was written. Many of the capabilities of LLM models that they explore have now been superseded, and limitations have been overcome. More training sources are available today for a beginner wishing to learn AI. However, it is unlikely that they intended their paper to have a long shelf life. It served an

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<sup>62</sup> Cong and Du (2024) also meet our search criteria. However, we exclude it from the analysis because it is an editorial that uses LLM as a research tool rather than as the subject of research.

immediate need, and that is sufficient. What that also means, though, is that a paper like Vasarhelyi et al (2023) would not be publishable today.

Li and Vasarhelyi (2024) is titled “Applying Large Language Models in Accounting: A Comparative Analysis of Different Methodologies and Off-the-Shelf Examples.” It was first submitted to JETA in December 2023 and accepted the following July. Its abstract states, “*This study provides an overview of mainstream LLM utilization methods, including user interface and application programming interface, and introduces a novel approach via robotic process automation integration. The advantages and limitations of each method are discussed, accompanied by a current analysis of the time, labor, and monetary costs involved in using LLMs for accounting tasks. To facilitate practical applications, three off-the-shelf examples are provided.*”

The mention of “off-the-shelf examples” suggests that the paper’s relevance in the future is limited. Indeed, the authors recognize that limitation, stating in their conclusion, “*The discussions of each method are based on the current level of technological development and cost. Some limitations might be overcome in the future with the adoption of new models. Additionally, the costs associated with each approach might change based on computing costs and market demand.*” Indeed, since Li and Vasarhelyi (2024) provide readers with sample programs that combine RPA and ChatGPT, they are vulnerable to obsolescence due to developments in both technologies.

For example, one of the tasks in the paper is to “*use GPT-4 to extract key indicators from 500 unstructured financial statements in text format and then input these indicators into the company’s internal system, which lacks an API connection.*” It is unlikely that the RPA-based solution they developed remains relevant today, given the significantly increased capabilities of the latest generation of LLM to both extract unstructured data and replicate what was previously done using RPA.<sup>63</sup>

Antinozzi and Cooper (2025) was also submitted in December 2023 but only accepted in January 2024, suggesting that it was subject to the usual prolonged publication process. As a result, it suffers from pre-publication obsolescence. Titled “Is ChatGPT an Accurate Source of

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<sup>63</sup> <https://foundationcapital.com/beyond-rpa-how-llms-are-ushering-in-a-new-era-of-intelligent-process-automation/>.

Information for Uninformed Taxpayers?” the authors pose common tax questions to ChatGPT versions 3.5 and 4.0 and assess the accuracy of their answers. The authors conclude that ChatGPT was not very accurate and susceptible to hallucination. Are any of these conclusions relevant today? That depends on how much more capable the current ChatGPT version is than the versions used by the authors in their tests.

To answer this question, we posed the following prompt to today’s free version of ChatGPT: “How much more powerful is the latest version of ChatGPT compared to the model in December 2023?” Its long and detailed response included the summary that (emphasis in original): *“The latest version of ChatGPT—GPT-4o (“Omni”), released in May 2024—is significantly more powerful than the version available in December 2023 (GPT-4-turbo)… GPT-4o is not just an upgrade in power—it’s a shift in experience. It’s faster, cheaper, smarter, and now senses the world in more human ways.”*

Moreover, there are now numerous commercial tax programs that utilize AI, such as [www.taxgpt.com](http://www.taxgpt.com), which promises that it is an *“AI tax assistant for tax professionals and businesses: Research taxes, get answers, draft memos, analyze data, and boost accountants’ productivity 10x.”*<sup>64</sup> Popular consumer-oriented tax preparation services such as TurboTax and H&R Block have developed their LLM programs and incorporated AI into their software and digital interfaces.<sup>65</sup> In short, AI in the tax area has progressed precisely as Alles, Kogan, and Vasarhelyi (2008) would have predicted, with developers other than AIS researchers taking the lead.

None of this implies that Antinozzi and Cooper (2025) or any other AI paper appearing in JETA should not have been published. However, the reality is that they had an exceptionally short period of relevancy and did not demonstrate a sustained comparative advantage relative to developments in the broader AI ecosystem. How much that is true of the other AI papers that other AIS journals have accepted is a question that warrants further research, but it is unlikely that the three JETA papers are exceptional relative to those.

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<sup>64</sup> <https://www.taxgpt.com/>.

<sup>65</sup> <https://www.fox.com/even-better/407732/turbotax-tax-day-deadline-hrblock>.

By contrast, Eulerich, et al. (2024) demonstrates the potential disruptive aspect of LLM in accounting education, research, and practice. They tested the capabilities of the Chat GPT 4 model to “*pass major accounting certification exams, including the Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Internal Auditor (CIA), and Enrolled Agent (EA) certification exams.*” According to the authors, “*...ChatGPT passed all exams with an average score of 85.1%.*” Only about one-fifth of human test takers pass all four parts of the CPA exam on their first try. In addition, passing a section of the CPA exam requires a minimum score of 75%.

The fact that Chat GPT (and probably other LLMs) is “smart” enough to pass all these challenging exams with high scores will increase the motivation for accounting firms to use LLMs in their practices, which could be problematic if it leads to over reliance on the technology: “[LLM] may also bring challenges. For example, professionals might depend too much on AI, leading to a decline in essential skills and judgment. Data privacy and security are major concerns, given the sensitive nature of financial information handled in these fields. The accuracy and reliability of LLMs, particularly in complex scenarios, are not foolproof, posing risks in decision-making. Additionally, there are ethical and compliance issues since, in their current form, LLMs may not fully align with the strict standards of the accounting profession.”

What makes Eulerich, et al. (2024) achieve a comparative advantage is that they show a benchmark result that will only prove more relevant as the capabilities of AI improve. If the current version of Chat GPT is already better than human test takers, its lead can only grow over time. Hence, instead of being a liability for the relevance of the research, the rapid improvement of AI in the future makes the paper even more significant today, showing how capable AI is in a specific accounting context.

On the other hand, consider what would have happened if the authors had instead found that the current version of Chat GPT was not as capable of passing the CPA exam as undergrads today. Then what would be the comparative advantage of their paper? That suggests that the difference between Eulerich, et al. (2024) and Antinozzi and Cooper (2025) is merely one of timing and luck, which shows why it is so important that AIS researchers think about what kind of contribution they can make when they pursue research into AI.

## 8. Conclusion

Much of what we have said in this paper about AI is already superseded by more recent developments by the time we finished writing it, let alone by the time it may appear in print. That is an inescapable reality when examining a technology that is the subject of such feverish attention as AI. That is precisely why we wrote this paper. We argue that it is feasible—though not easy—for accounting researchers to produce value-adding AI research even in an environment in which, for example, the New York Times reports that “*Chinese spy services have invested heavily in artificial intelligence to create new tools to speed analysis, provide early warning of threats and potentially help shape operational plans during a war, according to a new report.*”<sup>66</sup> As Alles, Kogan, and Vasarhelyi (2008) wrote, accounting researchers can achieve a comparative advantage in the face of the stiffest competition that they have ever faced, but only if they approach AI research systematically and not by just jumping on the nearest bandwagon.

AI is described as an inflection point not just in technology but also in the development of human civilization: a new industrial revolution on a par with the replacement of animal power with that of steam and fossil fuels. AI may similarly result in substituting for human intelligence across many domains. Accounting researchers are as motivated as other academics to conduct AI research. However, if they are to contribute rather than reinvent the wheel with work done by others with more resources and capabilities, they need to find research topics where they have an edge. It may seem paradoxical, but the best opportunity for them comes from being technology agnostic, meaning that research is focused on those aspects of the interaction between accounting practice and AI that are less susceptible to change as the capabilities of AI as a technology increase exponentially.

We advocate a technology-agnostic approach towards finding research topics by adopting the strategy of BPR and asking: What would our accounting processes look like if we built them for the first time today, taking advantage of the capabilities offered by AI?” That focuses attention on persistent behavioral issues that arise when redesigning an accounting process to take advantage of the capabilities of AI rather than on AI as a generic technology.

An example of a research topic likely to be a comparative advantage for AIS researchers to pursue is whether AI will be used as a tool by accountants to improve their decision-making, or

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<sup>66</sup> <https://www.nytimes.com/2025/06/17/us/politics/chinas-ai-spy-agencies.html>.

whether it will substitute for the role of the human accountant. A related question with potential is how the training of accountants will change when AI replaces traditional entry-level work.

These examples of technology-agnostic AI research topics that AIS researchers can undertake are not exhaustive. How could they be? As the capabilities of AI become more robust, the technology will be used in more applications in ways that are difficult to predict. These use cases will then generate new and unexpected behavioral issues.

For example, recently, a disgruntled school employee posted a fake AI-generated video clip showing his principal making racist and antisemitic comments.<sup>67</sup> This practice, which has given rise to the new term “deepfake revenge slander,” follows numerous cases where students have used AI to create deepfake nude images of their classmates.<sup>68</sup> In hindsight, it might seem obvious that AI would cause these specific problems, but people were taken aback and unprepared when they first occurred. What happens when auditors encounter AI deepfake videos in Zoom interviews?

The problem with predicting the extent of behavioral issues that AI will give rise to is analogous to O’Leary’s (2008) warning that, at the technology trigger stage, it is too early for definitive research. As he wrote, “*researchers focusing on applications are not likely to readily visualize the entire scope of applications of technologies at this step*”, so it is not likely that researchers can fully identify every behavioral risk that AI will give rise to. Despite that caveat, we argue that the technology-agnostic BPR-based approach we advocate in this paper gives AIS researchers the greatest likelihood to establish a comparative advantage in this rapidly changing field of AI research.

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<sup>67</sup> <https://www.nytimes.com/2024/04/25/technology/deepfake-recording-principal-arrest.html>.

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