DeepSeek and Academia Impact on Higher Education Assessments: Taking "Management Accounting" Course as an Example

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Abstract: This essay explores the intersection of AI-driven tools like DeepSeek and its impact on academic assessments in accounting education. Using the Management Accounting course as an example, this research examines how AI technologies are influencing the nature of student assessments, particularly in terms of their effectiveness and accuracy. The study also investigates how DeepSeek serves as both an educational aid and a potential threat to traditional accounting assessment methods. By analyzing multiple choice questions (MCQs) from 22'–23', the second semester's final exam performance for the Management Accounting course, the research evaluates the AI's ability to solve numerical and narrative-based questions correctly, comparing its performance against traditional student responses. Findings suggest that while AI can achieve high performance on simpler tasks, it struggles with complex accounting concepts that require critical thinking and deeper understanding. Furthermore, the paper discusses the implications of these findings for both lecturers and students, highlighting the need for a balance between technological innovation and traditional academic integrity. Ultimately, it calls for a re-evaluation of assessment frameworks to incorporate AI as a tool for learning enhancement while safeguarding against misuse in academic environments.

Keywords: DeepSeek; Tutor-DeepSeek-student "Three-way Inter-connection"; AI in academia; Higher education; Management accounting

1. Introduction

The rapid advancement of artificial intelligence (AI) has led to significant transformations across various industries, with accounting education being no exception. As an AI technology, ChatGPT continues to evolve and reshape the landscape of academic assessments in accounting courses. Now, the newborn DeepSeek provides one more choice for educators to utilize those AI tools in lecturing and assessment. With the rapid integration and deployment by educational intelligence units, educational technology companies, and universities, DeepSeek is advancing from the periphery to the core of education. It will accelerate the technological revolution driven by artificial intelligence, thereby promoting educational transformation [1]. This research tries to enhance the

efficiency of traditional exam assessment methods.

Financial intelligence powered by AI has altered the roles and functions of accounting professionals, necessitating a shift in the way accounting education and assessments are approached [2]. Management accounting, being a critical tool for internal business management, is undergoing a profound transformation through the integration of AI technologies. Meanwhile, artificial intelligence can also transform curriculum structures to create new hybrid teaching models, which can reshape training programs to achieve fully personalized learning pathways, thereby enhancing the quality of talent cultivation in higher education [3]. In recent years, AI technologies have integrated a trend of "human-machine collaboration" in which AI systems assist accountants by providing accurate data models and cost and profit forecasts with greater efficiency [4]. So, how do these tools also assist in the course assessment? As of January 2025, DeepSeek had 33.7 million monthly active users worldwide, while China, India, and Indonesia are the largest markets for DeepSeek, accounting for 51.24% of DeepSeek monthly active users. DeepSeek website unique visitors per week amounted to 15.9 million [5].

Given the increasing use of AI in business settings, there is a growing need for academic institutions to rethink their teaching models and content in light of these technological advancements. AI's application in management accounting offers both opportunities and challenges for instructors and students alike. While AI tools can enhance learning and assessment experiences by providing faster and more accurate solutions to financial problems, they can also raise questions about the validity and integrity of student assessments [6]. This essay explores how DeepSeek, as an AI tool, influences the assessment practices within Management Accounting courses. By analyzing its performance in multiple-choice questions and comparing it to traditional student responses, this study aims to investigate both the potential of AI in educational settings and the concerns it raises in terms of academic integrity and assessment accuracy.

2. Apply DeepSeek in Management Accounting course assessments

2.1. Theoretical framework

The agency framework employed below delineates the dynamic interplay between DeepSeek and the course lecturer in the co-creation of academic outputs in the final assessments of the Management Accounting course. Within this framework, the lecturer comprises two primary stakeholder groups: academics (lecturer) and students. The interaction between academia and DeepSeek is conceptualized as a form of humanlike interaction, thereby enabling a quasi-human-to-human engagement with academic stakeholders. This framework underscores the collaborative and interdependent nature of the relationship, wherein DeepSeek serves as a co-creative agent alongside traditional academic participants in assessment marking, as shown below in **Figure 1.**
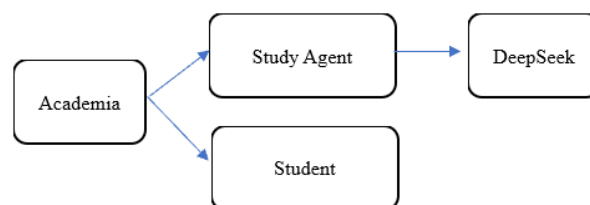

Figure 1. Framework on academia and DeepSeek interaction

2.2. Methodology

The methodological framework employed in this study is structured around the evaluation of two distinct users: Students and DeepSeek. Each user is assessed through a set of 10 questions from management accounting final assessments, evenly divided into five narrative (qualitative) and five numerical (quantitative) questions. To ensure

methodological rigor, each question is independently tested by two distinct platforms: Student and DeepSeek. Artificial intelligence can transform curriculum structures to create new hybrid teaching models, and it can reshape training programs to achieve fully personalized learning pathways, thereby enhancing the quality of talent cultivation in higher education. This approach aligns with established accounting research methodologies, emphasizing the systematic evaluation for assessment, as shown in **Figure 2**.
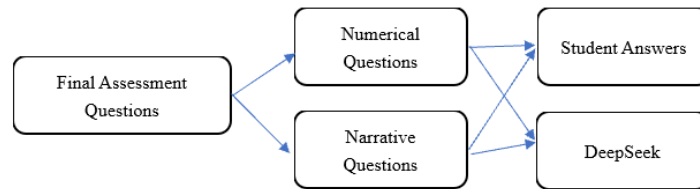

Figure 2. Methodological framework on user interaction

2.3. Performance comparison

According to **Table 1,** questions with higher accuracy rates (e.g., Questions 1, 8, and 10) typically involve basic concepts or theories, indicating better student comprehension. Questions with lower accuracy rates (e.g., Questions 5, 7, and 9) may involve calculations or more complex accounting treatments, requiring students to strengthen their understanding and practical skills. Meanwhile, for numerical questions, DeepSeek performed better than the student, and vice versa for narrative questions. However, the overall performance from DeepSeek is appreciated, which can meet the requirement to act as an assessment checker.

Table 1. Performance summary and comparison between students and DeepSeek

ID	Question type	Check point	Correct answer/ DeepSeek answer	DeepSeek performance	Student performance
1	Narrative	Conceptual	A/A	Correct	85%
2	Numerical	Bond	B/B	Correct	70%
3	Narrative	IRR	C/C	Correct	65%
4	Narrative	Contribution	B/B	Correct	75%
5	Numerical	Inventory	B/D	Incorrect	60%
6	Narrative	Cost center	D/C	Incorrect	80%
7	Narrative	Job costing	B/B	Correct	55%
8	Narrative	Performance management	C/C	Correct	90%
9	Narrative	Reporting	A/A	Correct	50%
10	Narrative	Conceptual	B/B	Correct	95%
Correct rate	Numerical			50%	65%
	Narrative			87.5%	74%

2.4. Advantages to adapting the framework
2.4.1. Enhanced efficiency in assessment marking

AI can handle time-consuming tasks such as the accounting entry, classification, and review of accounting records automatically, thereby enhancing the accuracy and efficiency of financial management [7]. Hence, Thanks to DeepSeek, workload and errors in course grading objective questions, checking calculations, or identifying key concepts in student's assessments may be reduced, which allows tutors to focus on higher-value tasks like

providing qualitative feedback or engaging with students.

2.4.2. Improved consistency and fairness

DeepSeek applies consistent criteria across all assessments, minimizing human biases or inconsistencies during making judgments.

2.4.3. Quasi-human interaction for engagement

DeepSeek's interactions as a quasi-human allow students to perceive the AI as a supportive and approachable tool rather than a cold, mechanical system. This fosters a more engaging learning environment.

2.4.4. Collaborative co-creation of academic outputs

DeepSeek can complement the lecturer's expertise under the framework. For example, DeepSeek can handle quantitative or data-heavy tasks, while the lecturer focuses on qualitative insights and critical thinking.

2.4.5. Alignment with modern educational trends

The framework aligns with the growing trend of incorporating AI tools into education, preparing students and lecturers for a future where human-AI collaboration is commonplace.

3. Implications for academia

3.1. Implications for knowledge

By making knowledge more accessible, DeepSeek has elevated the benchmark of assumed knowledge for all stakeholders, including the scholarly community comprising of academics and students. The automated assistance provided by DeepSeek has challenged the traditional assessment methods.

Education is one of the core scenarios for the application of AI. Through cost reduction and efficiency improvement, DeepSeek has the potential to empower the education industry [8]. Since there is no universally accepted definition of originality, it is essential to contextualize it within specific academic disciplines and course structures. For instance, originality in accounting courses differs significantly from medical courses. Even within accounting, subfields - such as management accounting, financial accounting, and accounting theory demand may vary.

3.2. Implications for DeepSeek

Strategic decision-making is a critical component of the business model. Such reflections are not aimed at reducing revenue but rather at optimizing it. However, these reflections can offer scenario-based solutions on how to generate the desired revenue while contributing differently to the business. DeepSeek can champion business by increasing opportunities for lecturers to optimize resources, thereby reducing the costs associated with acquiring and disseminating knowledge. This would allow the lecturer to allocate more funds toward developing students' skills. Furthermore, DeepSeek can also champion AI businesses to share information and develop co-patented software, enhancing student learning within academic institutions.

3.3. Challenges to using DeepSeek in assessment

3.3.1. Accuracy and contextual understanding

While DeepSeek can efficiently process numerical data and solve routine accounting problems, it often struggles with the deeper contextual understanding required in management accounting. Many accounting problems require

not only technical calculations but also interpretation of data within specific business contexts, such as cost behavior analysis or strategic decision-making. AI tools may misinterpret underlying assumptions or fail to grasp nuanced business scenarios, leading to incorrect solutions or inappropriate recommendations.

3.3.2. Threat to academic integrity

DeepSeek usually raises concerns about academic integrity and the potential for students to rely too heavily on automated solutions rather than engaging in critical thinking. Students might misuse the technology to bypass learning or submit AI-generated responses as their own, undermining the purpose of assessments. This presents a challenge for educators in ensuring that AI does not replace the essential cognitive processes involved in learning management accounting.

3.3.3. Lack of adaptability to complex or evolving assessment criteria

Management Accounting course assessments often involve complex problem-solving that may change over time based on new theories, emerging trends, or real-world scenarios. DeepSeek is typically trained on historical data and may struggle to adapt quickly to evolving coursework, new methods, or unique questions that require creative solutions. As accounting practices evolve, so too must assessment methods, posing a challenge for AI tools that cannot keep pace with the dynamic nature of the field.

4. Future development

The integration of DeepSeek into management accounting assessments has shown promising results. Even significant potential for further development is foreseeable. Future advancements can focus on enhancing the DeepSeek's ability to handle complex, context-driven problems, improving its adaptability to evolving assessment criteria and addressing ethical concerns related to academic integrity. Below are key areas for further development, supported by relevant literature:

Firstly, enhancing contextual understanding and critical thinking. DeepSeek's current capabilities are limited in interpreting business scenarios and applying critical thinking to solve complex accounting problems, which means it can't be used to check opening questions. Future research should focus on improving the DeepSeek's ability to understand contextual factors, such as accounting gaps, industry-specific regulations, organizational structures, and strategic decision-making processes. This can be achieved by establishing a platform like Huawei's AIDC center to train AI on a larger database that includes diverse business cases and real-world scenarios [9].

Secondly, adapting to evolving assessment criteria. Management accounting is a dynamic field that continuously evolves with new theories, practices, and technologies. DeepSeek must be designed to adapt to these changes by incorporating real-time updates and learning from emerging trends. For instance, integrating machine learning algorithms that can analyze and adapt to new assessment frameworks will ensure that AI can remain relevant and effective [10].

Thirdly, ensure academic integrity. To address concerns about academic integrity, future developments should include robust mechanisms to detect and prevent misuse of DeepSeek by students. To address these concerns, future studies can prioritize user trust and integrity through transparent communication, robust privacy safeguards, and the mechanisms to mitigate plagiarism risks by using AI tools (e.g., PICO frameworks) [11,12].

Fourthly, collaborative learning and co-creation. Colleges can facilitate a cross-domain knowledge exchange platform involving DeepSeek can be further developed to facilitate collaborative learning between students and educators [13]. For example, the AI could be used to generate personalized feedback for students, helping them identify areas for improvement and encouraging active engagement with course materials. Additionally, DeepSeek

could support the co-creation of assessments by providing lecturers with insights into student performance and suggesting tailored questions based on learning outcomes.

Finally, ethical and inclusive AI development. As DeepSeek becomes more integrated into education, it is crucial to ensure that its development aligns with ethical principles and promotes inclusivity. This includes addressing biases in AI algorithms, ensuring transparency in decision-making processes, and making the technology accessible to students or business users from diverse backgrounds [14].

5. Conclusion

DeepSeek's superior performance in numerical questions compared to students, while students outperform AI in narrative-based questions. We believe that, although there may be associated risks and integrity issues. However, enhancing contextual comprehension, adapting to dynamic assessment criteria, ensuring academic integrity, and promoting collaborative learning can assist artificial intelligence tools in improving and ultimately revolutionizing the quality and efficiency of course assessments in college. Furthermore, this will help to construct a top-notch innovative talent cultivation system that meets the demands of future technological and societal development needs, to equip students with interdisciplinary knowledge integration, critical thinking, and self-directed learning capabilities with a global perspective, thereby satisfying the nation's talent requirements in critical fields [15].

Disclosure statement

The authors declare no conflict of interest.

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