

Is Artificial Intelligence a New Threat to the Academic Ethics?: Enron Scandal Revisited By ChatGPT

(Yapay Zekâ Akademik Etik İçin Yeni Bir Tehdit Mi?: Enron Skandalının ChatGPT ile Yeniden Ele Alınması)

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Abstract

This study aims to discuss the effects of the use of artificial intelligence tools in academic research on academic ethics. For this purpose, the case method used in business education is chosen and the Enron case is made written with the commands given to the artificial intelligence application ChatGPT. The case study obtained from ChatGPT is evaluated within the framework of academic ethics. Two important results obtained can be mentioned: (1) By giving appropriate commands to ChatGPT, (i) the text flow in different formats can be created, (ii) a literature search can be made, (iii) discussion questions can be created, (iv) the conclusion and introduction sections can be written, (v) a title can be selected for the created text, (vi) keywords can be selected, (vii) a summary can be written and (viii) a reference list can be created in a desired format. (2) When appropriate commands are selected in ChatGPT, (i) an article with a low score in similarity check can be obtained, (ii) the article can be converted into different wordings by writing some additional commands. The fact that the application does not recognize a text that it has created before is a significant challenge to the similarity questioning. As a result, it is commented that the use of artificial intelligence tools in academic research has potential of violation of academic ethics and limited access to technologies that can detect this violation is an important challenge to academic writing.

Keywords:

Artificial intelligence, ChatGPT, Academic ethics, Case study, Enron

Paper type:

Research

Öz

Bu çalışma yapay zeka araçlarının akademik araştırmalarda kullanılmasının akademik etik üzerindeki etkilerini tartışmayı amaçlamaktadır. Bu amaçla işletme eğitiminde kullanılan vaka yöntemi seçilmiş ve yapay zeka uygulaması ChatGPT'ye verilen komutlar ile Enron vakası yazdırılmıştır. ChatGPT'den elde edilen vaka çalışması akademik etik çerçevesinde değerlendirilmiştir. Elde edilen iki önemli sonuçtan bahsedilebilir: (1) ChatGPT'ye uygun komutlar verilerek (i) farklı formatlarda metin akışı oluşturulabilir, (ii) literatür taraması yapılabilir, (iii) tartışma soruları oluşturulabilir, (iv) sonuç ve giriş bölümleri yazılabilir, (v) oluşturulan metin için başlık seçilebilir, (vi) anahtar kelimeler seçilebilir, (vii) özet yazılabilir ve (viii) istenilen formatta kaynakça listesi hazırlanabilir. (2) ChatGPT'de uygun komutlar seçildiğinde, (i) benzerlik kontrolünden düşük puan alan bir makale elde edilebilir, (ii) bazı ek komutlar yazılarak makale farklı ifadelerle dönüştürülebilir. Uygulamanın daha önce oluşturduğu bir metni tanınamaması benzerlik sorgulaması için önemli bir zorluktur. Sonuç olarak akademik araştırmalarda yapay zeka araçlarının kullanılmasının akademik etik ihlali potansiyeli taşıdığı ve bu ihlali tespit edebilen teknolojilere sınırlı erişimin akademik yazım için önemli bir zorluk olduğu yorumlanmıştır.

Anahtar Kelimeler:

Yapay Zekâ, ChatGPT, Akademik Etik, Vak'a Çalışması, Enron

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Introduction

Artificial intelligence applications, in addition to other technologies such as Industry 4.0, internet of things, blockchain, augmented reality, are among the developments that affect human life. An important development in artificial intelligence applications is that the open artificial intelligence application ChatGPT was became accessible to the end users in the last quarter of 2022. With the implementation of ChatGPT, discussions about the authenticity of the outputs obtained from the application have also started to emerge. In this direction, comments are made that originality is under threat in many areas from simple homework preparation to academic studies.

This study was started under these discussions. At the time we started studying, on one side, new technologies that enable the detection of works produced with artificial intelligence continued to be developed, while on the other side, ChatGPT application was added to academic studies as a co-author¹. Within the framework of these discussions, we decided to conduct a study on integrating artificial intelligence into the business case study technique in connection with corporate governance practices. For this purpose, we have decided to create an article about the Enron case, a well-known business scandal, created with commands given to the ChatGPT application. In that way, we aim to analyze ethical implications of use of artificial intelligence in generating academic studies by using similarity report results.

While writing this case study, we have taken into consideration the basic principles of the case study technique, which is handled sensitively in Istanbul University Business School operating in Turkey and whose foundations go back to Harvard Business School. The experiences we gained using the ChatGPT application helped us to get to know this application and evaluate its status against academic ethics. During the study, the preparation process of the case is emphasized rather than evaluating the case study that generated.

In this context, we start our work by first explaining the concept of ethics. Following this first part, we focus on artificial intelligence and ChatGPT that we used in our study. In this section, we also include discussions on academic ethics within the scope of artificial intelligence applications. In the next section, we give information about the case study technique. After this first part, in which the subject is discussed at the theoretical level, the research part of our study is presented. In this part, the process of obtaining artificial intelligence-based case study and the findings made in this process are listed. In the conclusion section that follows this section, the conclusions based on these findings are discussed. To our best knowledge, this study is the first to combine business case analysis, which has an important place in academic literature, with artificial intelligence.

¹ For the first example see O'Connor, S. & ChatGPT, (2023), Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse? *Nurse Education in Practice*, 33.

1. Scientific Research and Publication Ethics

Ethics can be classified as a sub-branch of philosophy founded on conscientious grounds (Mahmutoğlu, 2009: 229). The concept of ethics can be defined simply as “the set of behaviors that the parties must comply with or avoid among various professions” (<https://sozluk.gov.tr/>). Ethics is the study of human behavior within the framework of moral rules (Cevizci, 2014: 218). The concept of ethics is often confused with the concept of morality. However, the main difference between ethics and morality is that it deals with actions and thoughts that can affect different people or groups (Yıldırım & Kadioğlu, 2007: 76).

As with scientists, there are ethical rules that members of different professions must follow. At this point, the concept of professional ethics emerges. Professional ethics is a set of rules that are created for a professional group, are enforced, have various penal sanctions in case of non-implementation, and aim to protect the quality of professional activities (Aydın, 2002: 3). Professional ethics is a set of principles based on beliefs about right and wrong, right and wrong actions related to business life (Çiçek vd., 2013: 5).

Ethics is also extremely important in terms of scientific research and publications. At all stages of research and publications, from the collection of data to the completion of the publication process, ethical first and foremost regulations must be respected. This situation is both a necessity of scientific ethics and a moral responsibility (Uğurlu, 2020: 69-70).

Scientific ethics is a set of rules such as honesty, impartiality and objectivity that scientists are expected to follow in their scientific studies. The most important branch of scientific ethics is publication ethics. Publication ethics is the set of rules related to the publication dimension of scientific studies. Vocational training is a set of rules for the profession of any member of the profession. From this point of view, academicians are within the scope of scientific ethics, publication ethics and professional ethics (Köksal, 2020: 210).

The main purpose of scientific research and publications is to share the knowledge produced and to ensure that it is developed for the benefit of humanity. From this point of view, it is extremely important that the content of scientific studies is complete, accurate, not containing incomplete or incorrect data and prepared in accordance with the relevant ethical rules (İnci, 2015: 285).

The "Scientific Research and Publication Ethics Directive" prepared by the Interuniversity Board (ÜAK) was amended on January 20, 2021 and its current version entered into force. The main purpose of the said regulation is to determine the ethical rules to be followed in scientific studies, publications and events (ÜAK, 2021:1).

In the directive prepared by ÜAK, the issues that violate scientific research and publication ethics are defined in six basic categories. These categories are as follows (ÜAK, 2021:1):

- Plagiarism: The use of scientific studies by other researchers, the methods and data used in these studies without attribution.

- **Forgery:** Conducting scientific studies using non-existent or distorted data.
- **Distortion:** Distorting the data obtained in the researches, reflecting the tools, equipment and data not used within the scope of the study as if they were used, manipulating the research results in line with the interests of different individuals or organizations.
- **Republishing:** Presenting duplicate publications prepared by the researcher as different publications.
- **Slicing:** Presenting the results obtained as a result of a research done as separate publications by breaking the integrity of the study.
- **Unfair Authorship:** Showing people who did not contribute actively during the research as authors, changing the order of the authors inappropriately, not including the names of the authors who did not contribute actively in the following editions of the study, adding their names among the authors by using their population even though they did not contribute to the study.

In addition to the six basic categories detailed above; not specifying the contributions of the contributors to the study, using unsubmitted or unaccepted studies as a source without the permission of the author, violating the provisions of the relevant legislation, not observing the patient's rights, conducting surveys without approval, not following the rules in force in research and experiments, etc. defined as other types of ethical violations (ÜAK, 2021:1-2)

Moreover, within the scope of "TUBITAK Research and Publication Ethics Board Regulation" published by Scientific and Technological Research Council of Turkey (TÜBİTAK), besides the duties and responsibilities of the board, types of behaviors against ethical rules are also included. Ethical violations defined in the regulation are fabrication, distortion, plagiarism, republishing, slicing, not including supporting organization information in publications, unfair authorship, non-compliance with reference rules, duly use of resources provided by the institution, failure to comply with acceptance and commitment statements, abuse of duty and making an unfounded allegation of violation of ethical rules (TÜBİTAK, 2018: 4).

In addition to the national principles and rules mentioned above, guidelines and good practices published by the Committee on Publication Ethics (COPE) in 2017 for academic publication ethics are important regulations accepted in the international arena in terms of academic publication ethics. These regulations define the principles and rules to be followed by both the journals in which the studies are published, the journal editors and the authors. These rules are complementary to other national and international rules and do not replace them. Within the framework of COPE ethical principles, the following practices are defined for publishers and journals (<https://publicationethics.org/core-practices>):

- **Allegations of Misconduct:** Publishers should establish their policies of misconduct and take into account any claims that may arise in this direction.

- Authorship and Contributorship: Transparent policies regarding the contribution rates of authors should be established and processes for the management of disputes should be designed.
- Complaints and Appeals: Complaint management and appeal processes should be designed by publishers.
- Conflicts of Interest / Competing Interests: Conflicts of interest and management processes should be clearly defined.
- Data and Reproducibility: Journals should have data policies and encourage the registration of guidelines and study designs.
- Ethical Oversight: With regard to ethical oversight, there should be policies regarding the ethical conduct of research and studies and the use of confidential data.
- Intellectual Property: Intellectual property policies should be defined and how to distinguish between plagiarism and conflicting publications should be determined.
- Journal Management: Journals' policies and processes should be defined and they should have a good infrastructure.
- Peer Review Processes: Peer review processes should be transparent. Policies for peer reviews should be established.
- Post-publication Discussions and Corrections: Mechanisms for post-publishing processes should be established.

Although the above-mentioned principles seem to apply directly to publishers and journals, they also indirectly concern the authors. In addition, within the framework of COPE authorship principles, authors are expected to comply with the rules specific to their discipline, to make sure that they do not violate the rights of other authors and their contributions to the studies they submit for publication (COPE, 2019).

In recent years, technology, internet and artificial intelligence have reached an extremely common usage area in the world. The use of these applications offers many advantages such as time saving in terms of scientific research, fast and unlimited access to information, easy access to studies in the international literature, easy supply of data to be used within the scope of studies, etc. On the other hand, these practices have also caused some threats in research and publication ethics.

These practices cause the works done by different people to be copied without complying with the reference rules, publication of different works by other authors as the author's own work, and the emergence of various tools such as Chat GPT, which will be informed in the following section, causing academic studies and ethical violations by the authors without any effort. Although plagiarism detection tools such as Turnitin are widely used in the academic world, new applications emerging with the development of technology also limit the effectiveness of these tools.

The effects of artificial intelligence applications such as Chat GPT on academic publications and the ethical acceptability of studies using artificial intelligence, the determination of whether they are written using artificial intelligence, whether these

studies can be considered as original works and whether they will be considered fake are among the discussion topics of relevant institutions, especially COPE.

2. Artificial Intelligence, ChatGPT and Ethics

Artificial intelligence is a concept that emerged in the mid-20th century. It is one of the basic concepts of Industry 4.0 philosophy and includes methods for solving complex problems that arise by the intelligent behavior of computers (Scrop, 2018: 2). Since the concept of artificial intelligence can be applied in different fields, there is no generally accepted definition. However, there are different definitions of the concept in the literature (Gacar, 2019: 390).

Artificial intelligence can be defined as sets of programs in which the behaviors exhibited by humans are imitated in some respects (Smith, 2018: 242). Artificial intelligence is the technology in which some functions such as reasoning, understanding, analyzing, interpreting performed by humans are performed by computers or machines. In this technology, human intelligence is imitated by means of software and algorithms in computers and machines. In this way, practical and fast solutions of some complex problems can be reached through these devices and human-induced errors can be minimized (Bayuk and Demir, 2019: 785).

Today, artificial intelligence applications are used by many corporate structures and these applications are starting to take the place of human intelligence more and more day by day. The primary goal in the use of artificial intelligence is to expand the business lines of enterprises and to start different business lines. Artificial intelligence mainly covers complex activities (Arkın, 2022: 160).

Artificial intelligence systems are generally grouped under three main categories. The first of these is the neural network technique. A neural network is a knowledge-based system. In this system, in addition to background information about events, relations with concepts in the field of application are also considered. The second category is robotic technology. Artificial intelligence techniques are used to create a robot that will include artificial intelligence network, decision making and knowledge-based systems. This technology has a wide range of applications. The last category is defined as the knowledge-based system. This structure is a computer program used for analysis and solution of complex problems. Thanks to these systems, the human data obtained are stored symbolically (Moudud-Ul-Huq, 2014: 11).

There are some aspects where artificial intelligence is superior to human intelligence. These features can be listed as follows (İTÜ, 2020):

- One of the prominent features of artificial intelligence is that it is permanent. Events forgotten by people over time due to different reasons will remain permanently in computer systems if they are not deleted consciously. The forgetting feature that exists in humans does not apply to computers.
- The second point is that artificial intelligence is shareable. The data in the computer environment can be easily transferred to different computers and information can be shared. On the other hand, it is not possible to transfer

the information contained in human intelligence to a completely different human being.

- Artificial intelligence is easier to obtain. A computer's intelligence level is easier to raise than human intelligence.
- Although people's reactions to the same events may vary, the reaction to the same events will be the same due to the consistency of artificial intelligence.
- Reactions to events by artificial intelligence are recorded. For this reason, when a similar event is encountered by artificial intelligence, the recorded data is used.

ChatGPT (Generative Pre-training Transformer), developed by OpenIA, can be defined as a neural network that processes large amounts of data, allows processing of inputs and outputs of different lengths, and can generate human-like texts. In this model, there are different language styles and different data sources such as articles, books and websites for the content of the subject. The data in the model is designed to eliminate low quality and repetitive data and to prevent the results from being biased in relation to one point of view. However, it also has the ability to create text using the data it provides and adapt to different topics (Zaremba & Demir, 2023:3-4).

The first point that draws attention when examined produced by ChatGPT is that the same command is not always responded to with the same content. This means that the content revealed during a chat is not affected by the content of past chats. However, different outputs can be obtained if the same command is entered in each trial without using any chat flow (Güçlütürk, 2022: 1904).

There are some ethical regulations regarding the use and development of artificial intelligence. For example; A regulation called "Ethics Guidelines for Trustworthy AI" has been created by the European Union. This regulation provides recommendations for the ethical use of artificial intelligence applications. However, whether there should be regulations on artificial intelligence applications and whether artificial intelligence applications should be held responsible for their own actions are among the current debates. Important ethical considerations that emerge with the use of artificial intelligence can be listed as bias, transparency, accountability, automation, privacy and security (Marquez, 2023: 10-12).

Ethical considerations originating from artificial intelligence in different fields of science are also on the agenda in the use of ChatGPT. This application can be used both unethically and ethically. In terms of unethical use, it can be used purely to falsify a study, given the application's ability to generate research in credible numbers. On the other hand, when evaluated from an ethical point of view, it can also be considered as a tool that provides support in terms of writing and shaping the researcher's own scientific knowledge (Howard et al. 2021; Banerjee et al., 2021).

When evaluated in terms of ethics, the most important issue that we encounter is how correct it is in terms of scientific and academic ethics for researchers to adopt the academic studies they have done over ChatGPT as their own work. Both this question and the ethical dilemmas that will arise as a result of the widespread use of the

application or similar different applications will appear as basic questions that await answers in the coming periods.

3. Case Studies as a Learning Tool

In 1921, the use of case studies has been started in management area with pioneering works of Harvard Business School. In Harvard University web-site, this method is defined as “a discussion of real-life situations that business executives have faced”.

The case method is applied as follows (Sarıkamış, 1999: 7):

- Collecting information about the case
- Preparing the case text
- Testing the case in a group or class
- Preparing a teaching note
- Obtaining permission from the company issuing the case

Key features of a case text can be listed as (Yücel et al, 2022: 384):

- It should be strictly based on facts.
- The date of occurrence must be specified.
- The authors should never write their personal views in the case.
- A scenario can be created to make the case interesting, but it should not spoil the essence of the business case.
- Numbers can be rounded to make the case easy to use in the discussion environment.
- Some references may be included in the case, for example the annual report of the company. However, a reference or reading list cannot be included, this is not an article, its inclusion is to convey the author's personal views.
- At the end of the case (which should not be seen as a requirement), some guiding questions can be put.

Note that this method has also been used at Istanbul University since 1954.

4. Study

4.1. Methodology

In this study, the use and capabilities of artificial intelligence are analyzed under the discussions of ethics in academic writing. ChatGPT, a popular application, is used to achieve purpose of the study. As an academic writing technique, business case study is determined and a well-known corporate governance case, Enron, is analyzed. Accordingly, an article analyzing the Enron case is generated by ChatGPT. To our best knowledge, this is the first case study written without human interaction. This article, written by ChatGPT, is used for discussions within the scope of academic ethics, and findings are listed later in this study.

In order to generate a case study, the following 24 messages was sent to the ChatGPT tool and all messages were responded by the tool. Messages are grouped under the following headlines as presented in Sarıkamış (1999):

Collecting information about the case:

Dialogue #1: Write an article with 5000 words explaining Enron Case.

Dialogue #2: Write a 500-word article about the founding period of the Enron company.

Dialogue #3: Give chronological orders of the events in Enron scandal.

Dialogue #4: Give financial facts and numbers about the scandal.

Dialogue #5: Give technical details about the accounting frauds in the scandal.

Dialogue #6: Explain use of SPEs in Enron scandal.

Dialogue #7: Explain the role of Mark-to-market accounting in the scandal.

Dialogue #8: Explain the role of Revenue recognition in the scandal.

Dialogue #9: Explain the role of Concealment of debt in the scandal.

Dialogue #10: Explain the role of Manipulation of reserves in the scandal.

Dialogue #11: Explain the role of Misclassification of transactions in the scandal.

Dialogue #12: Explain Arthur Anderson's role in the scandal.

Dialogue #13: Explain the role of internal audit in the scandal.

Dialogue #14: Explain the role of regulatory authorities in the scandal.

Dialogue #15: Explain the role of top management in the scandal.

Dialogue #16: Analyze the board of directors' role in the Enron scandal.

This is what Sarıkamış (1999) defines as the first step of the case method. In this respect, Dialogue #1 was used as an introduction to the topic. Dialogue #2, #3 and #4 were commands used to make a deeper analysis of the case. The number of words required in responses was defined in some user commands, as in #1 and #2, but in most cases ChatGPT failed to meet with these requirements.

Dialogues #5 to #11 were root-cause questions after the first introduction part. In Dialogue #5, ChatGPT listed the root-causes of the scandal as the use of SPEs, mark-to-market accounting, revenue recognition, concealment of debt, manipulation of reserves and misclassification of transactions. Dialogues #6-#11 aimed to expand on each root-cause in detail.

Dialogues #13, #14, #15 and #16 approached to the Enron scandal with roles and responsibilities of different stakeholders. ChatGPT analyzed the involvement of the external auditor, internal auditor, regulatory authority, top management and board of directors in the Enron scandal in terms of the role and responsibility of each stakeholder.

Preparing the case text:

Dialogue #17: Write an essay summarizing lessons-learned from the scandal by using most cited 10 articles about the scandal.

Dialogue #18: Write a 1000-word case study using the content of this chat in a dialogue format in which two imaginary characters should discuss the scandal in this order: 1. Founding period of Enron. 2. Chronological order of the events in Enron scandal.

Dialogue #19: Continue with 1000-word to the conversation in this order: 3. Conditions resulted with the scandal. 4. Financial facts and numbers about the scandal.

Dialogue #20: Continue with 1000-word to the conversation in this order: 5. Technical details about the accounting frauds in the scandal by explaining roles of SPEs, Mark-to-market accounting, Revenue recognition, Concealment of debt, Manipulation of reserves and Misclassification of transactions.

Dialogue #21: Continue with 1000-word to the conversation in this order: 6. Roles of Arthur Anderson, board of directors, top management, internal audit and regulatory authorities in the scandal.

Dialogue #22: Write 3 discussion questions from your last 4 chat messages.

Preparing the case text is second step defined in Sarıkamış (1999). To perform this task, the following steps were conducted. Dialogue #17 summarized the lessons-learned from the scandal and used the 10 most cited articles on the topic. Note that ChatGPT also has academic literature review capabilities.

Dialogues #1 to #17 built up some essential information about the scandal on a conversation page of the chat. Enron article generated from the information placed on that page in order to ensure integrity of the topic and predefined scope in the Enron article. Thus, a command containing the phrase "...using the content of this chat..." was used in the conversation. Following this rule, the article was written with four commands in Dialogues #18 to #21, which include:

- The founding period of Enron
- Chronological order of events in the Enron scandal
- Conditions resulting in the scandal
- Financial facts and numbers related to the scandal
- Technical details about accounting frauds in the scandal, i.e., the roles of SPEs, mark-to-market accounting, revenue recognition, concealment of debt, manipulation of reserves and misclassification of transactions
- Roles of different stakeholders

The same sequence can be used in generating any case study, as it is simply a flow of (i) conditions, (ii) facts, (iii) root-causes, and (iii) results.

While writing the article, a conversation between two imaginary people was chosen as structure of the case study. Thus, Dialogues #18 to #21 requested outputs from ChatGPT in conversation format. The reason the dialogue is divided into four parts was the character restrictions in ChatGPT responses. Although 1000-word texts were requested from ChatGPT, the application responded with fewer words. In order to finalize the article, these four responses were copied and pasted in a blank MS Word file in the same order in the chat.

Dialogue #22 was used to derive three discussion questions from the text generated by Dialogues #18 to #21. The article was finalized with two commands, Dialogue #23 and #24, in which the title and keywords for the article were selected. The final version of the article, entirely written by ChatGPT, is included in Appendix-1 of this article. This article is analyzed with the Turnitin database to evaluate its originality. In our study, we obtained 18% similarity score, which is acceptable for most academic journals.

Testing the case in a group or class: In our case study, this step is ignored, but when it is applied and results are summarized and shared with ChatGPT, it is quite possible to change the format of the case study. But this step requires human intervention and depending on the purpose of this study, which analysis artificial intelligence-produced studies, this step is not applied.

Preparing a teaching note: This is another step that is defined in Sarıkamış (1999). Since our purpose is not related with the assessment of applicability of the case studies during education activities, this step is also omitted. Since these teaching notes are not published in practice, it is not possible to find a criterion to make comparisons.

Obtaining permission from the company issuing the case: Since the company which is used in case study has been already gone to bankruptcy, obtaining permission from the company is not possible.

Other steps:

We conducted some other steps to complete the text with the following dialogues:

Dialogue #23: Write a title to an academic article generated from your last 5 messages.

Dialogue #24: Find 3 keywords for this article.

Some additional commands were also used in case of ChatGPT stopped responding due to a technical issue or character limit. In these cases, the “continue” command was effective to continue the conversation.

Before the article was finalized, some other dialogues were also used to analyze ChatGPT, but due to the structure used in the case study format, the outputs of these dialogues were not included in the final version of the article. These questions were:

Dialogue #25: Write an abstract for an academic study using the discussion in this chat.

Dialogue #26: Write a 500-word academic article about the Enron scandal by citing the 10 most cited academic articles on this topic.

Dialogue #27: Write a reference list for the text in APA 6 format.

Dialogue #28: Write an introduction for the text.

Dialogue #29: Write a conclusion section for the text.

Although Dialogues #25 to #29 were not included in the final version of the article, the outputs of these dialogues are commented in the next section.

The last three conversations were about exploring the tool's other capabilities. In Dialogue #30, the availability of the ChatGPT tool was questioned to check the

originality of a text. In Dialogue #31, the text has been translated into a different language. A re-phrase of a selected text was requested in Dialogue #32.

Dialogue #30: Did you write the following text?

Dialogue #31: Translate this text into Turkish.

Dialogue #32: Re-phrase the text.

According to Sarıkamış (1999), case text should have some key features. In our methodology, these features are taken into consideration. First of all, our case that we used in the study is based on facts. Enron case is very well-known case in business researches. The dates are specified. To do that, chronological order of the events are analyzed. The authors did not write their personal views in the case, but during the imaginery discussion some comments inserted into the dialogue to have more efficient discussions. A scenario is created between two imaginery character to make the case interesting. Numbers can be rounded to make the case easy. No reference is used. Literature review results are reported as a separate document. At the end of the case, some guiding questions are put.

This study has some limitations. Because ChatGPT is an artificial intelligence tool with learning capabilities, our results represent the analysis of ChatGPT outputs over a given time. Therefore, the result of this study cannot be repeated by subsequent researchers. A second limitation concerns the character limit of the ChatGPT tool. Although there is no predefined limit for ChatGPT responses, it is understood in our study that the tool intends to keep responses as short as possible. Thus, multiple commands are needed to have an article, and it requires limited human intervention to the process, but not to the article, to have an article with an acceptable number of words.

4.2. Findings

The text obtained from ChatGPT is compared with some other articles written on Enron case. To perform this task, Sarıkamış (1999) is selected as criteria set.

Table 1. Comparison of Case Studies

Criteria	ChatGPT (2023)	Healy & Palepu (2003)	Moncarz et.al. (2006)	Li (2010)	Sarıoğlu (2002)	Gore & Murthy (2011)	Hawkins & Cohen (2005)	Aysan (2007)
Based on facts	X	X	X	X	X	X	X	X
Specified date of occurrence	X	X	X	X	X	X	X	X
No authors' personal views	X						X	X
Scenario based	X							X
Rounded numbers	X	X	X	X	X	X	X	X
No reference list	X						X	X
Guiding questions	X					X	X	

(Table 1 is generated by writers.)

Table 1 shows the results of the comparison made between ChatGPT (2023), which is generated with this article, and other case studies. Hawkins & Cohen (2005) is a Harvard Business School paper, thus matches almost all criteria presented in Sarıkamış (1999). The purpose of this paper is creating discussion opportunities among learners. Aysan (2007) also covers almost all requirements of a case study, except guiding questions which are defined as optional. Other papers generally aim to analyze the case and to result conclusions presenting lessons learned from the case. Because aims of the articles are distinguished, different formats can be found. Our work, as intended, is closer to those which are defined in Sarıkamış (1999). The only comment that can be added here is that although our work is considered as a case study without authors' personal views, imaginary conversation scenario consists of some comments on roles and responsibilities. But it is thought that these can be taken as details to create discussion opportunities among learners, rather than being subjective conclusions.

The comparison between ChatGPT(2023) and previous studies shows us that an article written by ChatGPT can have all features of a case study if it is designed in this way by giving the appropriate commands to the tool. After the article is finalized and the originality report is questioned, some other findings are also noted.

First, although ChatGPT cannot create articles with many words, it is possible to generate responses from multiple dialogs and combine them into a single article. Our study showed that to create a case study, some commands must be typed into the tool and the responses from ChatGPT must be collected in a single article by a researcher. Therefore, limited human intervention is required to trigger the process and collect ChatGPT's responses in academic paper format. However, this task assigned to the researcher represents only an organizational role and does not mean that the article is not the product of an artificial intelligence tool. As a result, ChatGPT can generate texts of different lengths depending on the conversation between the tool and the researcher, allowing this tool to be used to respond to different research objectives.

Another finding is that ChatGPT can generate output in different formats. In our study, we used a format in which two imaginary people chat. Different formats can be created depending on the motivation of the researchers. This can result in output that looks more academic than simple homework.

In addition to these two findings, in our study, we noticed that ChatGPT can produce different responses to the same questions asked at different times. This makes ChatGPT outputs less traceable and results in multiple outputs on the same topic.

Fourth result which is obtained from our study is that ChatGPT makes it possible to translate any text into a different language within the same chatbox. In our study, we translated the text into Turkish and satisfactory results were obtained in terms of language use. This also makes ChatGPT results less traceable.

It is possible to re-phrase a text with ChatGPT. Thus, traceability can be reduced with additional commands and the similarity index in the originality report results can be reduced. Note also that it is always possible for researchers to fine-tune texts. This is reported as our fifth finding.

ChatGPT does not have a checking tool inside, which means ChatGPT cannot confirm whether a text has been produced by the tool. In our study, we asked ChatGPT to confirm whether it produced a text previously prepared by it, and for this we signed up with a different user than the user who produced the text. ChatGPT denied that its self-generated text was a product of the tool.

The most remarkable finding from the article is left for last. Our study showed that the 100% artificial intelligence generated case study has a similarity index of only 18%, which is acceptable for most academic journals. However, the similarity rate in a single article was reported as 8%, which can easily be reduced with the adjustments in Finding #5.

In addition to the findings from the case study created by ChatGPT, some additional findings can also be listed. Literature review can be performed by ChatGPT. In our study, we did not include the literature review section in accordance with the format used in case studies, but literature review section is included in most academic studies. The literature review by ChatGPT and references used are listed in Appendix-2.

Last finding is that other capabilities of the tool include generating a title and keywords for a selected text. ChatGPT can also create a reference list, introduction and conclusion sections and abstract for articles, required for most academic studies.

In addition to these findings, it should be noted that the case generated by ChatGPT does not comply with the clause "not including the author's opinion" stated in the previous sections. However, this issue will not be discussed in the concluding part, as our focus is on the issue of publishing the case study rather than its educational power.

5. Conclusion

While artificial intelligence applications are penetrating different areas of life day by day, naturally the academy gets its share from it. However, the use of artificial intelligence in academic research is highly controversial when evaluated from the perspective of academic ethics.

In our study, a business case was written entirely with the commands given to artificial intelligence and our findings regarding this writing process were listed in the previous sections. Our study showed that an article written by ChatGPT can have all features of a case study if it is designed in this way by giving the appropriate commands to the tool. Other findings can be consolidated under two results.

First, our findings prove that ChatGPT is highly capable of generating academic writing. By giving appropriate commands, the text flow that should be in an academic article in different formats can be created, a literature review can be made, discussion questions can be created, the conclusion and introduction sections can be prepared, a title can be selected for the created text, keywords can be selected, a summary can be written, and a reference list can be created in a desired format. These capabilities can be used to create articles that keep human intervention to a minimum.

Secondly, our findings show that when appropriate commands are selected in artificial intelligence-based applications such as ChatGPT, an article with a low score

in similarity check can be obtained. Moreover, by writing some additional commands, the obtained article can be converted, and lower scores can be obtained. Things that can be done for this include obtaining different article formats, writing new commands in the application, translating the article into another language and re-phrasing the text. The fact that the application does not recognize a text that it has created before is a significant challenge to the similarity questioning.

In addition to the other traditional academic violation types described in the first part of this study, a new type of academic violation emerged with the excessive use of artificial intelligence. When ChatGPT was asked the question “Can ethical violations occur in academic articles written using ChatGPT?”, the application replied “Ethical violations can occur in academic articles written using ChatGPT if the authors fail to adhere to ethical standards for research and writing, such as plagiarism, fabrication of data, or failure to properly cite sources. Additionally, if the authors use ChatGPT to generate content that is not their original work, without proper attribution, it would be considered as a violation of academic ethics. It is the authors' responsibility to ensure that their work adheres to ethical standards regardless of the tools they use to generate content.”

Today, the limited access to technologies that will detect academic violations caused by the use of artificial intelligence is an important threat to academic writing. Moreover, these controls have not yet been identified as a mandatory step in the editorial or peer review processes. This threat can be reduced with education and support that will improve the mentality of academics on ethical issues. Researchers should know that articles produced by artificial intelligence can be detected retrospectively with technologies to be developed in the future, and they should stay away from this way.

To our best knowledge, this study is the first to combine business case analysis, which has an important place in academic literature, with artificial intelligence. To do that, a case study is prepared by an artificial intelligence tool with commands given to the tool and the text generated by the tool is analyzed by the authors from research ethics point of view. In the following studies, different analyzes can be made to compare the results of this study with different business scandals, or the Enron case can be discussed again after a certain period of time, depending on the developments in artificial intelligence technology.

Contribution Rate and Conflict of Interest Statement

All stages of the study were designed by the author(s) and contributed equally. There is no conflict of interest in this article.

Ethics Statement and Financial Support

Ethics committee principles were followed in the study. Ethics Committee Report is not required in the study. There has been no situation requiring permission within the framework of intellectual property and copyrights.

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APPENDIX-1: THE ARTICLE

"The Enron Scandal: A Cautionary Tale of Corporate Greed and the Importance of Transparency and Accountability in Financial Reporting"

ChatGPT

Keywords: Enron scandal, Corporate greed, Transparency and accountability in financial reporting

John: Hi, I've been hearing a lot about the Enron scandal lately, and I was wondering if you could explain it to me?

Jane: Sure, I'd be happy to. Enron was an American energy company that was founded in 1985 by Kenneth Lay, who merged two natural gas pipeline companies. At the time, it was considered to be one of the most innovative and successful companies in the energy sector.

John: That sounds like a great start, but what went wrong?

Jane: Well, a series of events led to the company's downfall. In the late 1990s, Enron began to engage in accounting fraud to hide its debt and inflate its profits. This included the use of Special Purpose Entities (SPEs) to remove debt and assets from its balance sheet, the use of mark-to-market accounting to inflate profits, and the recognition of revenue from long-term contracts before the revenue was earned.

John: That sounds like a lot of deception. Can you give me a chronological order of the events that led to the scandal?

Jane: Sure, in 2000, Enron's stock price began to fall after the company announced that it had overstated its earnings for the previous four years. In 2001, the company restated its financial statements, which revealed that it had overstated its profits by \$586 million. In October 2001, Enron announced that it had overstated its profits for the previous five years by \$586 million, and that it would have to restate its financial statements. This caused the company's stock price to drop, and investors began to lose trust in the company. In December 2001, Enron filed for bankruptcy, and it was revealed that the company's financial condition was much worse than it had been previously reported.

John: That's a lot of financial deception and it had a huge impact on the investors, Can you tell me about the conditions resulted in the scandal?

Jane: The main conditions that led to the scandal were the lack of transparency in the company's financial reporting, the failure of the company's internal controls and the failure of the company's external audit. Additionally, the company's top management, including CEO Jeff Skilling and Chairman Kenneth Lay, were heavily involved in the accounting fraud and they misled investors and analysts about the company's financial condition. The company's auditor, Arthur Andersen, also played a role in the scandal by failing to properly audit the company's financial statements.

Jane: As I mentioned earlier, the lack of transparency in the company's financial reporting and the failure of the company's internal controls and external audit were major conditions that led to the scandal. Additionally, there were also issues with corporate governance within the company. The board of directors, who were supposed to be responsible for overseeing the company's management, failed to do so and were found to have been aware of the accounting frauds but did not take action to stop it. Furthermore, the company's culture of secrecy and fear of retaliation also contributed to the scandal, as

employees who raised concerns about the company's financial practices were often ignored or punished.

John: That's very concerning. Can you give me some financial facts and numbers about the scandal?

Jane: Sure, at the peak of its success, Enron's stock price was valued at \$90 per share. However, after the scandal was revealed, the stock price dropped to just pennies per share. In total, investors lost more than \$74 billion due to the accounting fraud. Additionally, the company's employees lost their jobs and their retirement savings were wiped out. The company's creditors also lost billions of dollars, and the company's collapse had a ripple effect on the entire energy sector and the economy as a whole.

John: That's a huge amount of financial loss, it's really devastating. Can you explain the impact of Enron scandal on the economy and the industry?

Jane: The Enron scandal had a significant impact on the economy and the energy industry. It led to a loss of confidence in the stock market and a decrease in investment. The scandal also led to increased regulation of the accounting and auditing industries, as well as stricter corporate governance rules for public companies. Additionally, it also led to a re-evaluation of the role of rating agencies and the impact of their ratings on investors. In the energy sector, Enron's collapse led to increased scrutiny of the accounting practices of other energy companies and a decline in investment in the sector. The ripple effect of the scandal was felt throughout the economy and led to a decrease in overall investor confidence in the stock market.

John: That's a lot of impact, It's clear that the Enron scandal was a result of a complex web of deception involving many individuals and entities. It's a cautionary tale of the dangers of corporate greed and the importance of transparency and accountability in financial reporting.

Jane: Yes, you're right, the Enron scandal was a result of multiple fraudulent activities, let me explain the technical details of the accounting frauds in the scandal. One of the main accounting frauds was the use of Special Purpose Entities (SPEs) to remove debt and assets from the balance sheet. This allowed the company to inflate its profits and make its financial condition appear stronger than it actually was. The company created these SPEs, which were controlled by Enron, but were not consolidated on the company's balance sheet. This allowed the company to keep debt and losses off its balance sheet, making it appear that it was more financially stable than it actually was.

John: That's a clever way to deceive the investors, what about the Mark-to-market accounting?

Jane: The company also used mark-to-market accounting to inflate profits, by recognizing revenue from long-term contracts before the revenue was earned. Under this accounting method, Enron recorded revenue from long-term contracts as soon as the contracts were signed, even though the revenue would not be earned for several years. This allowed the company to inflate its profits in the short-term and make its financial condition appear stronger than it actually was.

John: That's a fraudulent activity, what about Revenue recognition?

Jane: Revenue recognition was also a key component of Enron's accounting fraud. The company used a variety of accounting tricks to inflate revenue and make the company appear more profitable than it actually was. For example, the company would recognize revenue from long-term contracts as soon as the contracts were signed, even though the revenue would not be earned for several years. Additionally, the company would recognize revenue from assets that it had not yet built, and it would recognize revenue from partnerships and joint ventures that were not profitable.

John: That's a lot of deception, what about Concealment of debt?

Jane: Concealment of debt was another key component of Enron's accounting fraud. The company used a variety of accounting tricks to hide its debt and make the company appear more financially stable than it actually was. For example, the company would use off-balance-sheet entities to hide debt, and it would use accounting techniques to reclassify debt as equity. Additionally, the company would inflate the value of its assets to make it appear that it had more assets than it actually did.

John: It's a lot of fraudulent activities, what about Manipulation of reserves?

Jane: The company also manipulated its reserves to inflate its profits and make its financial condition appear stronger than it actually was. For example, the company would overstate the value of its reserves, which would increase the company's profits. Additionally, the company would also misclassify transactions to hide its debt and inflate its profits.

John: That's a lot of fraudulent activities, what is the impact of these activities on the company and its stakeholders?

Jane: These fraudulent activities had a huge impact on the company and its stakeholders. The company's stock price was inflated, and investors lost billions of dollars when the stock price dropped. The company's employees also lost their jobs and their retirement savings were wiped out. Additionally, the company's creditors also lost billions of dollars, and the company's collapse had a ripple effect

Jane: I completely agree, the Enron scandal was a result of a complex web of deception involving many individuals and entities, let me explain the role of each of the parties you mentioned.

John: Sure, let's start with Arthur Anderson.

Jane: Arthur Anderson, Enron's auditor, failed to properly audit the company's financial statements and was later found guilty of obstruction of justice for destroying documents related to the audit. The company's auditor should have detected and reported the accounting frauds but failed to do so, which led to the continuation of the fraudulent activities.

John: That's a huge failure, what about the board of directors?

Jane: The board of directors, who were supposed to be responsible for overseeing the company's management, failed to do so and were found to have been aware of the accounting frauds but did not take action to stop it. This failure of the board of directors is a key example of the importance of good corporate governance, as the board is responsible for protecting the interests of shareholders and ensuring the company is operating in an ethical and lawful manner.

John: That's a huge failure in their responsibility, what about top management?

Jane: Top management, including CEO Jeff Skilling and Chairman Kenneth Lay, were heavily involved in the accounting fraud and misled investors and analysts about the company's financial condition. They took advantage of their positions of power within the company to deceive stakeholders, and their actions were a significant contributing factor to the company's collapse.

John: That's a huge failure in leadership, what about internal audit?

Jane: The internal audit department failed to detect and prevent the fraud. The internal audit is responsible for ensuring that the company's financial statements and internal controls are in compliance with laws and regulations. However, in the case of Enron, the internal audit department failed to detect the accounting frauds and did not report them to the appropriate parties.

John: That's a failure in the company's internal control, what about the regulatory authorities?

Jane: The regulatory authorities, such as the Securities and Exchange Commission (SEC), failed to properly regulate the company and enforce accounting standards. The SEC is responsible for enforcing laws and regulations that protect investors and ensure that public companies provide accurate and transparent financial information. However, in the case of Enron, the SEC failed to detect and prevent the accounting fraud, which allowed the fraud to continue for several years.

John: That's a lot of failure in different levels and parties, it's clear that the Enron scandal was a result of a complex web of deception involving many individuals and entities. It's a cautionary tale of the dangers of corporate greed and the importance of transparency and accountability in financial reporting.

Discuss:

1. What were the main accounting frauds that Enron used to inflate its profits and hide its debt?
2. How did the failure of the board of directors, top management, internal audit, and regulatory authorities contribute to the Enron scandal?
3. What were the consequences of the Enron scandal for the company's stakeholders, such as investors, employees, and creditors?

APPENDIX-2: LITERATURE REVIEW*

The causes of the Enron scandal have been widely studied in the academic literature. One of the most cited articles on the topic is "The Fall of Enron" by Paul M. Healy and Krishna G. Palepu (2003), which examines the role of corporate governance and accounting irregularities in the scandal. The authors argue that the failure of the board of directors to effectively oversee the company's management and the use of aggressive accounting practices were major contributing factors to the scandal.

The role of auditors and accounting firms in the Enron scandal has also been widely studied. "Auditor Independence and the Enron Scandal" by Stephen A. Zeff (2002) examines the role of Arthur Andersen, Enron's auditor, in the scandal. The author argues that the firm's failure to detect and prevent the fraud at Enron was due to a lack of auditor independence and a conflict of interest. Another study, "The Role of Auditing in the Enron Scandal" by Douglas R. Carmichael and others (2003) also examines the role of auditors in the scandal, and argues that the scandal highlights the need for stronger regulation of the auditing profession.

The impact of the Enron scandal has also been widely studied in the academic literature. "The Costs of the Enron Scandal" by Mark J. Roe (2003) examines the financial impact of the scandal on shareholders and employees. The author argues that the scandal resulted in significant financial losses for both groups, and highlights the need for stronger protections for shareholders and employees in the event of corporate fraud. Another study, "The Enron Scandal and the State of Corporate Disclosure" by John C. Coffee Jr. (2002) examines the impact of the scandal on public trust in corporations and the regulatory response. The author argues that the scandal highlights the need for greater transparency and accountability in financial reporting.

The lessons learned from the Enron scandal have also been widely studied in the academic literature. "The Enron Collapse: Creative Accounting or Faith-Based Investing?" by Paul M. Healy and Krishna G. Palepu (2002) examines the role of corporate governance and ethics in the scandal, and argues that the scandal highlights the need for stronger internal controls and greater accountability for top executives. Another study, "The Enron Scandal: A Failure of Governance" by George J. Benston and others (2002) examines the role of corporate governance in the scandal, and argues that the failure of the board of directors to effectively oversee the company's management was a major contributing factor to the scandal. The study also highlights the need for greater independence and expertise of board members, and the importance of effective communication between the board and shareholders.

Another study, "The Enron Scandal: Corporate Governance and Ethical Issues" by Shaukat Ali (2004), examines the ethical issues surrounding the scandal and argues that the culture of Enron was a major contributor to the scandal. The study suggests that a strong ethical culture and effective code of conduct could have prevented the scandal from happening.

Finally, "The Enron Scandal and Its Impact on the Development of Corporate Governance" by David L. Yermack (2003) examines the Enron scandal in the context of other corporate scandals and argues that the Enron scandal was a significant event in the development of corporate governance. The study suggests that the scandal led to a number of changes in corporate governance and accounting regulations, including the Sarbanes-Oxley Act, which was enacted in response to the scandal in order to increase transparency and accountability in financial reporting.

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(*) Turnitin reports 4% similarity for this 581 word-text.

(**) Reference list is presented by ChatGPT in APA 6 format.