

The Use of Big Data Analytics in Detecting Academic Fraud

✉ Firdatul Jannah, Anara Indrany Nanda Ayu Anissa, Wanda Maulida, Novita
Trilogi University, South Jakarta, Indonesia

ARTICLE INFORMATION

Article History:

Received September 22, 2021

Revised November 19, 2021

Accepted December 02, 2022

DOI:

[10.21532/apfjournal.v7i2.261](https://doi.org/10.21532/apfjournal.v7i2.261)



This is an open access article under
the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) License

ABSTRACT

This study aims to find out the effect of using big data analytics on the detection of academic fraud so that it can provide improvements and create significant changes, especially in reducing the level of academic fraud among students. The variables used in this research are big data analytics as the independent variable and academic fraud as the dependent variable. This study uses primary data obtained from questionnaires distributed to Trilogi University students. The sample is 258 students from all study programs at Trilogi University class 2017 - 2020. The data processing and analysis method uses Partial Least Square (PLS). The results of this study indicate that the use of big data analytics has a positive and significant effect on the detection of academic fraud. This shows that universities that use big data analytics are able to detect academic fraud committed by students.

Keyword: Big Data Analytics, Academic Fraud, Students, Higher Education.

1. INTRODUCTION

Education is a sector that was developed with the aim of creating a generation that can advance the nation and state because this sector is associated with broad knowledge, good ethics, and high responsibility. At all levels of education, from elementary school to university, students are taught to always act honestly and responsibly in every action they take. In higher education, students are required to be responsible for understanding course material and uphold the values of honesty

when submitting assignments. But in fact, at the university level there are still fraudulent acts committed by students, or often referred to as academic fraud. Academic fraud is dishonest behavior carried out by students intentionally with the aim of getting benefits for themselves or a group (Pramudyastuti, 2020). According to Purnama (2013), there are several fraudulent acts committed by students with different percentages, such as cheating in using prohibited materials (3%), plagiarism (22%), falsification of

How to Cite:

Jannah, F., Anissa, A. I., Maulida, W., Novita. (2022). The Use of Big Data Analytics in Detecting Academic Fraud. *Asia Pacific Fraud Journal*, 7(2), 173-184. <http://doi.org/10.21532/apfjournal.v7i2.261>.

✉ Corresponding author :
Email: firdatuljannah18@gmail.com

Association of Certified Fraud Examiners (ACFE)
Indonesia Chapter
Page. 173-184

data or statements (13%), falsification of circumstances such as not attending class with the wrong reason (10%). Honesty in carrying out lectures is very important for college students, especially related to giving grades.

Academic fraud occurs for many reasons. Based on the fraud triangle theory introduced by Cressy (1953), there are several factors that encourage students to commit fraud, one of which is pressure that comes from the people closest to them, such as parents, siblings, or friends. (Hartanto, 2012). Pressure can also come from a person's financial condition. This condition can lead a person to take the action of cheating. For example, one of the requirements to get a scholarship is a high achievement index. Therefore, to be able to meet these requirements, students do anything, including cheating in order to get high scores. Cheating occurs because there are opportunities for students to do so, lack of supervision from lecturers during exams, and lack of thoroughness of lecturers when correcting student assignments (Alvin, 2008). At the time of cheating, students will rationalize their actions. They assume that their actions are right because other friends also do the same thing. Besides, they cheat because they do not want to get bad grades from the lecturers.

Fraud that is done repeatedly will have a negative impact on the future of the students themselves. They will get used to committing fraud by using other people for their own benefit and not the result of their own efforts or abilities. The solution to improve the quality of education that is free from academic fraud is to use technological developments, one of which is big data analytics technology. according to Agustini (2017), The benefits of big data analytics in the education and learning process are to help make decisions quickly and analyze in real time, such as in registration and tuition payments, online learning and assessment, as well as educating students to get used to working with data. The benefit of using big data

analytics in the analytics-based learning process is to provide additional knowledge and support for the future of students, such as learning about technology tools. (Agustini, 2017). In addition, academic analytics also supports the performance of academic staff, such as lecturers becoming more competent in teaching (Agustini, 2017). The analytics process can analyze in real time related to higher education processes because it contains data relating to student activities, lecturers, and units related to other processes and activities (Agustini, 2017).

In the field of education, the use of big data is very helpful to know the progress of students in learning because it collects information from the devices used by students and gets grades. Big data can also be used to see the learning potential that is tailored to the way of teaching and student development outside of academics. In addition, the use of analytics tools or data analytics can help students to be honest (Ali, 2021). According to Kaufman in Ernawati (2017), the act of cheating that is often done by students is copying and pasting from their friends' answers or from the internet. In this case, the use of big data analytics can detect plagiarism of the sentences in the task. Students have a tendency not to submit assignments on time. Therefore, big data analytics can provide information in real time, such as the time of collection, making it easier for lecturers to know whether students collect on time or not (Efgivia & Givia, 2020). The object of this research is Trilogi University. It is hoped that Trologi University can maximize the use of big data analytics, especially in detecting student fraud, so that it can improve the achievement of fraud-free education quality and increase accreditation.

The continuous implementation of big data analytics can improve the quality of education. This study aims to determine the effect of the use of big data analytics, such as the academic information system (SIKAD) and e-learning system, on the detection of academic fraud. The use of

big data analytics is intended to increase security and confidentiality so as to provide quality education that is free from fraud. The difference between this study and previous research is that this study looks at the effect of using big data analytics in education so that it is expected to provide input for higher education institutions that by implementing big data analytics can reduce the level of academic fraud among students. In addition, the use of big data analytics can provide real time improvement and decision making and assist educators in making better learning strategies in the future.

2. LITERATURE REVIEW AND HYPOTHESIS

Fraud

Fraud is a negative thing in the eyes of society (Aksa, 2018). Fraud refers to the behavior of avoiding obligations carried out by certain people or parties to gain profits and cause financial or non-financial losses to other parties. According to ACFE (2012), fraud is an act that is intentionally carried out by one or more people to use the resources of an organization unreasonably and inappropriately in presenting facts to obtain personal interests. There are several world cases that occur due to fraud, such as the cases of Enron, WorldCom, Tyco, and Global Crossing.

Fraud Triangle

Fraud occurs due to three factors as mentioned in the fraud triangle theory, pressure, opportunity, and rationalization (Akenbor and Oghoghomeh, 2013). Pressure can occur on students due to economic factors and the demands of parents to be able to get high grades or achievement indexes. Opportunities are used by students to cheat by looking at the right situation to do so, such as cheating when the lecturer is out of class during an exam. Rationalization is a justification of what is done with the consideration that other people are also doing the same thing (Fitriana & Baridwan, 2012).

There are two factors that influence academic fraud behavior: internal and external factors. Internal factors include a person's self-concept that can describe a positive academic self-concept towards him. Self-esteem can be in the form of self-evaluation related to convincing oneself of one's abilities and successes. But the opposite can happen if someone has a negative self-concept. A person's negative thoughts can affect the way he learns so that he can cheat to achieve that goal (Wibowo & Wahyuningrum, 2019).

Academic fraud is often found in the world of education. Fitriana & Baridwan (2012) explained that the development of technology and the existence of the internet can be a new challenge for academics. Pressure factors include unhealthy friendships, demands for a minimum passing grade for each course, time for graduation, and economic factors. Bad habits that are done repeatedly will turn into an acceptable culture, thus providing opportunities for students who have less awareness to do bad or unethical things, such as copying from a friend's assignment for each course, copying answers listed on the academic system page or website, making cheats during exams, and cheating on exams. A person rationalizes his wrong actions to be right. Students assume that cheating is commonplace because many students also do the same thing and no party is harmed.

Big Data Analytics

Big data analytics can be used to analyze student experiences in real time resulting from student activities such as course registration, payment, participation, online learning, and assessment. The use of big data analytics in education includes learning analytics, academic analytics, and process analytics (Efgivia, 2020).

Data analytics is the science of extracting actionable information from large data sets to help individuals or organizations make better decisions. Data analytics uses machine learning,

artificial intelligence, statistics, natural language processing technologies to find patterns in data, data visualization, and human interaction tools to enable users to understand these patterns (Darono, 2018). According to Briney (2019) learning analytics is the measurement, collection, analysis, and reporting of data about students and their backgrounds with the aim of understanding and optimizing learning and the environment in which it occurs.

Academic analytics relies on extracting data from one or more systems, such as a CMS or student information system. The data that can be stored in the data warehouse for continuous use is analyzed using statistical software and the resulting mathematical models. Based on the model and predefined qualifications, certain actions can be activated, such as sending electronic notifications to students or initiating personal intervention by university staff (Campbell et al., 2007).

Process analytics is used to analyze university business processes in real time. The data used can be obtained from registration data for students, lecturers and units related to university processes and activities or activity data which is then processed to find new business processes. However, process analytics is not limited to business process discovery. Process analytics can be used to verify compliance, detect deviations, predict delays, support decision making, and recommend process redesigns. So, process analysis also serves as a reference for the development of big data analytics (Efgivia, 2020).

Hypothesis Development

Big data analytics is a system that can process information into separate data because every activity that uses the system will be read and become a collection of data (Varian, 2014). Big data analytics itself is data that exceeds the processing capacity of conventional database systems. The results of the data released by big data analytics can be used as information by users to analyze the results of the activities

carried out. Based on this explanation, it can be concluded that the use of big data analytics can detect fraud committed in the education sector. The results of research conducted by Ali (2021) show that big data analytics has a positive effect on academic fraud. This is related to optimizing education and training management strategies in increasing the efficiency of educational activities and personal learning systems. The results of research conducted by Efgivia (2020) show that big data analytics has a positive effect on academic cheating. This is related to assisting students and academic staff in creating a conducive learning atmosphere. Furthermore, the results of research conducted by Agustini (2017) show that big data analytics has a positive influence on the detection of academic fraud. This is intended so that students, heads of study programs, lecturers, and academic bureaus can carry out lecture procedures in accordance with the academic information system that has been established. This is in line with the results of research conducted by Ernawati (2017) that the existence of big data analytics in the academic system has a positive influence on the detection of fraud committed by students. Furthermore, the results of research conducted by Purnama (2013) also show that the use of big data analytics in the education sector has a positive effect on detecting student fraud.

H1: Big data analytics has a positive effect on academic fraud detection.

3. METHODS

The population used in this study is active students from all study programs, class of 2017-2020, Trilogi University, with a total of 2,603 students. This study uses students as the research population because technological developments are considered capable of changing students' mindsets to commit fraud in order to get good grades. In this case, the use of big data analytics is expected to be able to detect fraud that occurs in academics. Sampling is carried out using a stratified random sampling

technique, a sampling process that involves a stratification process followed by the selection of subjects from each stratum (Sekaran & Bougie, 2017). In determining the sample size, this study uses the Slovin formula because the total population of this study is known (Hidayat, 2017).

$$N=n/(1+Ne^2)$$

The research sample used for testing is 266 students. This study used a closed statement questionnaire because the questionnaire form was distributed online. It is intended to save paper, maintain flexibility, get a wide range. The questionnaire scale uses a rating scale, meaning that the data results are in the form of numbers indicating agree or disagree with the questionnaire statement (Sugiyono, 2010).

Questionnaire data is collected and analyzed to get the results of the answers to the hypotheses. This study uses two forms of testing: descriptive analysis and verification analysis. The testing tool used is SmartPLS version 3.3.3. Quantitative descriptive analysis is used to explain and describe the results of data that have been collected without having the aim of producing generalized conclusions. Descriptive presentation of data is carried out using tables and diagrams of the results of the student respondents' questionnaires so that the results can be ascertained. The validity and reliability test of the data aims to produce valid and reliable research data. The next analysis is verification using the Partial Least Square (PLS) method. Verification is carried out to test the alignment between the research objectives and the related underlying

theory based on the data (Suryana, 2010). Test using Partial Least Square (PLS) is conducted to analyze the inner model. The results of testing the data are considered to meet the criteria of validity and reliability if the resulting loading factor value is $\geq 0,70$ (Ghozali & Latan, 2015). The purpose of the inner model analysis is to show the level of strength between latent variables and constructs (Ghozali & Latan, 2015). According to Ghozali & Latan (2015), R Square value of 0.67 means strong, 0.33 means moderate, and 0.19 means weak. According to Hair Jr et al. (2017), the value of path coefficients close to +1 indicates that the relationship between the two constructs is getting stronger. However, the value closer to -1 indicates that the relationship is in a negative direction. The next test is the outer model test. This test is conducted to determine the relationship between each indicator and its latent variables (Ghozali & Latan, 2015). The test criteria is if the t-static value is greater than the t-table value, with a significance level of 95%, which is 1.96 or the same as if the p-value $\leq \alpha$ 0.05, so it can be stated that the independent variable has an effect on the dependent variable (Ghozali & Latan, 2015).

4. RESULTS AND DISCUSSION

Figure 1 above shows that the distribution of respondent data collected is 266 respondents who are Trilogi University students from various study programs and classes that are used as research samples. The figure shows that the respondents collected in the study are in accordance with the sample criteria needed for further data processing and analysis.

Table 1. Operational Variables

Variable	Sub-Operational Variable	Indicator
Big Data Analytics	Learning Analytics	Student Learning Process
	Academic Analytics	Academic Performance Measurement
	Process Analytics	Business Process in College
Academic Fraud	Academic Fraud	Information Technology Abuse Plagiarism

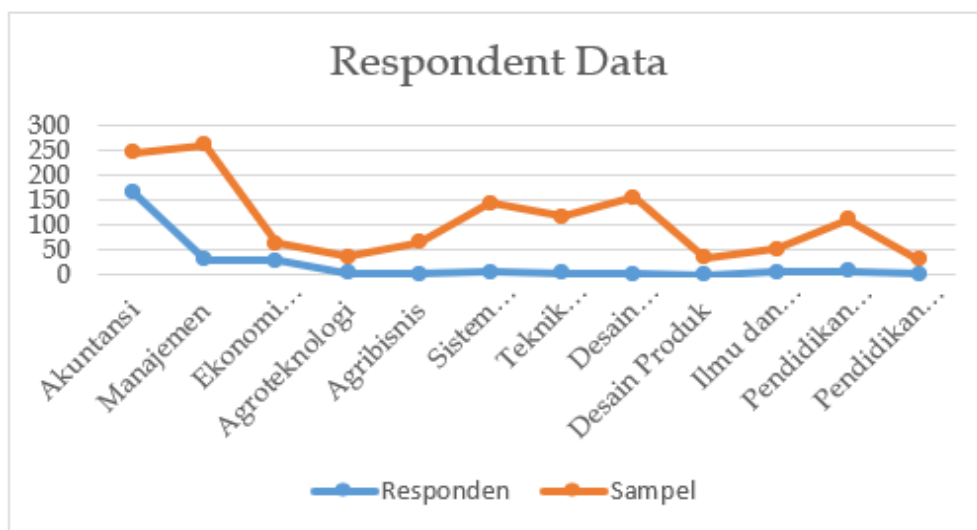
Source: Educate, (2020)

Figure 2 shows big data analytics variables for the sub-variables of learning analytics, academic analytics, and process analytics. A value above 3.0 means that respondents agree that big data analytics plays a good role in improving the academic learning process at Trilogi University. The implementation of big data analytics at Trilogi University can be seen in the academic information system (SIKAD) where students feel that they are being helped in the learning process because of the role of learning analytics which is part of big data analytics. Through the use of learning analytics, students can find out when to register for payments by opening the academic system. In addition, students can also find out the course schedule in real time. The academic information system also displays student grades, attendance percentage, and courses that have passed or need to be repeated. In addition, students can also input their own study plan card. Big data analytics can also optimize university academic information systems in improving academic performance. Academic analytics is able to measure academic performance because its activities have been recorded in the academic system. Based on this description, data analytics plays a role in displaying the performance of the Head of Study

Programs, Lecturers, and the Academic Administration Bureau. Data analytics can display the amount of student registration payments more relevantly and in real time. Academic information systems also produce process analytics. In this case, through data analytics, parties such as the Head of the Study Program, Lecturers, and the Academic Administration Bureau can make decisions according to the data generated by the system. Data analytics also helps provide relevant data information to make it easier for data users to analyze and improve academic processes. The use of data analytics also helps universities in detecting irregularities in academics and makes the academic process more efficient and effective.

Figure 3 shows the respondent's perception of academic fraud using the indicators of plagiarism and technology abuse with a value above 3.0, which means that respondents agree that many students commit academic fraud. Many students commit plagiarism when doing assignments or exams and use technology to commit fraudulent acts. By using big data analytics and academic information systems, fraud can be prevented and detected by the system. Trilogi University stipulates requirements for students who will take the exam, for example, the student

Figure 1. Respondent Data

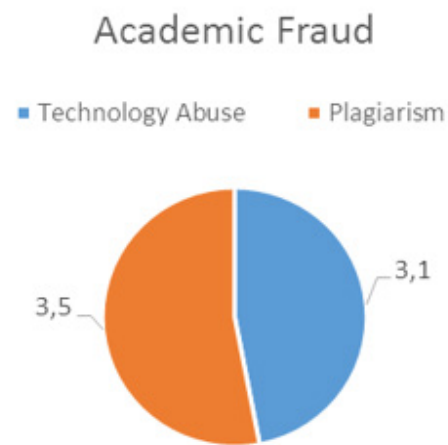


Source: Questionnaire Data (processed, 2021)

must meet the requirements for attendance in the course with an attendance percentage of 75% or a minimum of 10 (ten) times of attendance. Based on this provision, if a student does not meet the minimum attendance, the student may have difficulty taking the exam because the student's exam card cannot be accessed. The academic information system can also detect student payment registrations. Students who have made payments can input the study plan card (KRS) for the semester to be taken and ask the academic supervisor to validate the student's study plan card (KRS) so that the data for the courses entered by students is considered appropriate. The system automatically cannot open study plan card access if the payment registration has not been confirmed. The academic information system is also used for the thesis process. To submit a thesis title and thesis proposal, students just need to upload it in a system. Furthermore, the file will be validated by the Head of the Study Program and the names of the supervisor and thesis examiner will be entered. Students who will change the title of the thesis must also update it through the academic information system with the aim of getting a supervisor's assignment letter with a new title as a condition for submitting a thesis trial. Every time doing thesis guidance, students must also fill out a notification in the academic information system with a minimum of 8 (eight) meetings. The

entire thesis process requires systematic validation of the Advisory Lecturer and Head of the Study Program. In big data analytics, all data related to students can be recorded and students cannot easily commit fraud. In the case of fraud in the form of plagiarism, the lecturer will conduct a turnitin or plagiarism check so that student assignments/articles/thesis can be identified and student fraud can be detected through big data analytics.

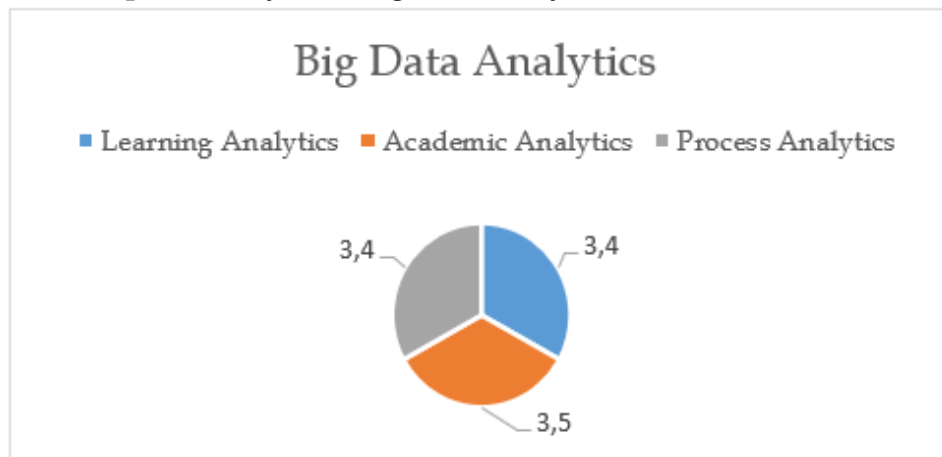
Figure 3. Descriptive Analysis of Academic Fraud Variable



Source: Questionnaire Data (processed, 2021)

Table 2 shows that the Average Variance Extracted value has met the criteria for convergent validity with a value above 0.50 for all indicators with construction, where the big data analytics variable has a value of 0.803 while the

Figure 2. Descriptive Analysis of Big Data Analytics Variable



Source: Questionnaire Data (processed, 2021)

Table 2. Validity and Reliability Test Results

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Big Data Analytics	0.767	0.89	0.89	0.803
Academic Fraud	1.000	1.000	1.000	1.000

Source: Partial Least Square Data (processed, 2021)

Table 5. Blindfolding Calculation Value

	SSO	SSE	Q ² (=1-SSE/SSO)
Big Data Analytics	522	522	
Academic Fraud	261	30.79	0.882

Source: Partial Least Square Data (Processed, 2021)

academic fraud variable has a value of 1.000. Based on these values, it can be concluded that all constructs have a high level of validity and validity discrimination and meet the criteria. Based on the value of composite reliability (rho_A), the big data analytics variable has a value of 0.890 while the academic fraud variable has a value of 1.000. Based on these two values, it can be concluded that the results of this study are reliable because they have a high level of reliability. Big data analytics has a Cronbach's Alpha value of 0.767 and academic fraud has a Cronbach's Alpha value of 1.000. Because all construct values are above 0.7, it can be concluded that the research results can be trusted or have a high level of reliability.

Table 3. Path Coefficient Value

	Big Data Analytics	Academic Fraud
Big Data Analytics		0.943
Academic Fraud		

Source: Partial Least Square Data (Processed, 2021)

In Table 3 the path coefficient value of 0.943 shows that big data analytics has a positive effect on academic fraud. These results explain that each construct has a positive influence on academic fraud.

Table 4. R Square Value

	R Square	R Square Adjusted
Academic Fraud	0.89	0.89

Source: Partial Least Square Data (Processed, 2021)

Table 4 shows that the value of R square (R²) is 0.890 or 89%, which means that 89% indicates that academic fraud is influenced by big data analytics and the remaining 11% is influenced by other variables outside this study. A value of 0.890 or 89% indicates a strong and valid relationship because the R² value is greater than 0.67.

Table 5 shows that the Q² value is 0.882 or 88.2%, which means that big data analytics has a high predictive relevance value for academic fraud and exceeds the strong criteria. The predictive relevance value is 0.35 or 35%.

Big Data Analytics in Detecting Academic Fraud

In Table 6 it can be seen that the original sample value is 0.943, the t-count value is 498.456, with a significant level of 0.000 indicating that big data analytics has a positive effect on the detection of academic fraud. These results are in line with the results of research conducted by Efgivia (2020) that the use of big data analytics in the higher education sector has a good impact. Big data analytics has a positive

effect in detecting indications of academic fraud. The results of this study support research conducted by Ali (2021) that the use of big data analytics in universities has a positive effect in helping the academic process so that students are more likely to comply with regulations. Academic information systems are able to detect the activities of the learning process. The results of this study are also in accordance with the results of research conducted by Agustini (2017) that big data analytics has a positive influence on the detection of academic fraud so that students, heads of study programs, lecturers, and academic bureaus can carry out academic activities in accordance with established procedures due to the existence of an academic information system that monitors all their activities. The results of this study also support the results of research conducted by Ernawati (2017) that the existence of big data analytics in the academic system has a positive effect on detecting fraud by students. In line with the results of the study, Purnama (2013) stated that the use of big data analytics in the education sector has a positive effect on detecting student fraud. The greater the use of big data analytics in an academic field, the greater the detection of fraud so that it has a good impact on academic business processes in preventing and detecting fraud committed by students, academic staff, and lecturers.

The results of the tabulated data in big data analytics generate large volumes of data that shows information to university officials for analysis. The implementation of big data analytics at Trilogi University provides a positive change in the tuition payment system. Payments no longer use the manual method because the process tends to be ineffective and inefficient and

allows for undetected manipulation. Big data Analytics plays an important role in registering. Tuition payments are routed through the Academic Information System. The data generated by the Academic Information System is more relevant, accurate and real time. The data becomes more transparent because students who have not made payments can be tracked by academic staff. Likewise, filling out the study plan card (KRS) cannot be done before the student makes a payment.

Academic Information Systems produce much better learning analytics. The student learning process is more systematic, where students can find out when to register for payments from the information published in the Academic Information System. Through learning analytics, students also know today's lecture schedule, tomorrow's lecture schedule, exam schedule, including monitoring lectures for each subject such as the percentage of attendance and the results of course scores obtained by students. The Head of Study Programs, Lecturers, and the Academic Administration Bureau will always update the student learning process so that learning analytics as part of big data analytics helps them monitor every student activity. The input of thesis proposal data and thesis data can also be done by using learning analytics in academic information systems to make it easier for students and lecturers in the guidance process, scheduling proposal hearings, and thesis trials because the information can be updated in the system in real time.

Support from the Academic Information System as part of big data analytics also helps in academic analytics where Trilogi University officials can find out, analyze,

Table 6. **Bootstrapping Value**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Value
Big Data Analytics > Academic Fraud	0.943	0.944	0.002	498.456	0.000

Source: Partial Least Square Data (Processed, 2021)

and measure academic performance. The big data cloud system can generate performance results of each academic staff such as the percentage of attendance and tasks performed by staff. The use of the academic information system at Trilogy University is also very useful because it is able to provide information to those in need which include the amount of fees or tuition payments received by the university. In addition, lecturers can also create online lecture forums if they cannot teach directly using the Academic Information System. Big data analytics produces relevant, accurate and real-time data information to Trilogi University, making it easy to track and detect academic fraud. Based on this description, the use of big data analytics in an academic field is very helpful for higher education business processes because those who need data and information can make the right decisions based on the data and information generated by the big data cloud. Furthermore, the Head of Study Programs, Lecturers and the Bureau of Academic Administration can also analyze and propose improvements that need to be made to support the progress of Trilogi University. The use of big data analytics can also detect irregularities committed by academic workers, students and lecturers related to university academics.

The increasingly advanced technology can also be used by students to commit fraud. However, the fraud can be detected with the use of big data analytics. Big data analytics is able to detect student fraudulent activities such as plagiarism in assignments or exam answers. In terms of plagiarism in assignments, lecturers can use turnitin so that students who commit fraud in the form of plagiarism can be detected through big data analytics. Through big data analytics and the existence of an academic information system, fraud can be prevented and detected by the system.

Trilogi University stipulates requirements for students who will take the exam, where the student must meet the attendance requirements for the course with an attendance percentage of 75% or a

minimum of 10 (ten) times of attendance. Based on these provisions, if a student does not meet the minimum attendance, the student will have difficulty taking the exam because the student exam card cannot be accessed.

The academic information system can also detect student payment registrations. Students who have made payments can input the study plan card (KRS) for the semester to be taken and ask the academic supervisor to validate the student study plan card so that the course data entered by the student is considered appropriate. The system automatically cannot open access to the study plan card if the payment registration has not been confirmed. Academic information systems are also used for the thesis process. To submit a thesis title and attach a thesis proposal, students just need to upload it to the system and then it will be validated by the Head of the Study Program. The names of the supervisors and thesis examiners will then be inputted. Students who want to change the title of the thesis must also update the academic information system, with the aim of getting a supervisor's assignment letter with a new title as a condition for submitting a thesis trial. In addition, students must also update every time they do thesis guidance in the academic information system with a minimum of 8 (eight) meetings. The entire thesis process requires systematic validation of the Advisory Lecturer and Head of the Study Program. The use of big data analytics can detect quickly if there are students who commit academic fraud. The use of big data analytics for universities greatly supports the success of education and creates quality students.

5. CONCLUSION

The use of big data analytics in the education sector plays an important role in improving academic business processes and supporting better quality education. In addition, it can help educators formulate teaching strategies and analyze information according to student needs. Educators

can also conduct learning forums using technology such as academic information systems and e-learning to adapt to current technological developments. Based on the results of this study, it can be concluded that big data analytics has a positive effect in detecting academic fraud. This can be proven by the use of turnitin in correcting the level of similarity in the results of student assignments with other authors. Big data analytics is also able to monitor students who have not made tuition payments (re-register) so that these students cannot take their study plan cards.

For universities, the use of big data analytics can improve the lecture process and simplify the academic process. In addition, universities also need to think about controlling the use of technology so that technology is used for positive things and not for academic fraud. It is recommended that further research add other variables such as student behavior in utilizing information technology.

The limitation of this research is that it is difficult for the researchers to collect and contact the respondents who are the sample of this study because the research was conducted during the implementation of the restriction on community activities (PPKM).

REFERENCE

- Agustini, K. (2017). Inovasi Teknologi dalam Pendidikan melalui Big Data Analytic dan Personalized Learning. *Prosiding Seminar Nasional Pendidikan Teknik Informatika (SENAPATI) Ke-8*, 0362, 27213.
- Akenbor, C. O. and Oghoghomeh, T. (2013). Forensic auditing and financial crime in Nigerian banks: A proactive approach. *The Business & Management Review*, 4.
- Aksa, A. F. (2018). Pencegahan dan Deteksi Kasus Korupsi Pada Sektor Publik Dengan Fraud Triangle. *Jurnal Ekonomi, Bisnis, Dan Akuntansi (JEBA)*, 20.
- Alvin, A. D. (2008). *No Title Auditing dan Jasa Assurance*. Erlangga.
- Briney, K. A. (2019). Data Management Practices in Academic Library Learning Analytics: A Critical Review. *Journal of Librarianship and Scholarly Communication*, 7(General Issue), 1-39.
- Campbell, J. P., DeBlois, P. B. , & Oblinger, D. G. (2007). Academic Analytis New Tool fo A New Era. *EDUCAUSE Review*, 41-57.
- Cressy, D. (1953). *Teori Fraud Triangle (2nd ed)*. Salemba Empat.
- Darono, A. (2018). *Pembelajaran Business Analytics dan Big Data Dalam Pendidikan Ekonomi dan Bisnis*.
- Efgivia & Givia. (2020). No Title Pemanfaatan Big Data Dalam Penelitian Teknologi Pendidikan. *Educate: Jurnal Teknologi Pendidikan*, 107-119.
- Efgivia, M. G. (2020). Pemanfaatan Big Data Dalam Penelitian Teknologi Pendidikan. *Educate: Jurnal Teknologi Pendidikan*, 107-119.
- Ernawati, S. (2017). *Kecurangan Akademik pada Mahasiswa Ditinjau dari Kepercayaan Diri dan Konformitas*. 1-15.
- Fitriana, A., & Baridwan, Z. (2012). Perilaku Kecurangan Akademik Mahasiswa Akuntansi: Dimensi Fraud Triangle. *Jurnal Akuntansi Multiparadigma JAMAL*, 242-254.
- Ghozali, I., & Latan, H. (2015). *Partial Least Squares: Konsep, Teknik, dan Aplikasi Menggunakan Program Smart PLS 3.0 (2nd ed)*. Universitas Diponegoro.
- Hair Jr, J. F., Hult, G., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd Editio)*. SAGE.

- Hartanto, D. (2012). *Bimbingan & Konseling Menyontek: Mengungkap Akar Masalah dan Solusinya*. Indeks.
- Ali, I. (2021). Peran dan Kontribusi Big Data dalam Pendidikan dan Pelatihan Kepustakawanan. *Madika : Media Informasi dan Komunikasi Diklat Kepustakawanan*, 5(1), 8-15.
- Pramudyastuti, O., Fatimah, A., & Wilujeng, D. (2020). Perilaku Kecurangan Akademik Mahasiswa Akuntansi: Investigasi Dimensi *Fraud Diamond*. *Journal of Economic, Management, Accounting and Technology*, 3(2), 147-153. <https://doi.org/10.32500/jematech.v3i2.1301>.
- Purnama, D. (2013). Faktor-faktor yang mempengaruhi kecurangan akademik pada mahasiswa. *Educational Psychology Journal*, 2(1), 13-21.
- Siemens, G., & Baker, R. S. J. d. (2012). Learning Analytics and Educational Data Mining: Towards Communication and Collaboration. *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge, Vancouver British Columbia Canada*.
- Suryana. (2010). *Metode Penelitian: Model Praktis Penelitian Kuantitatif dan Kualitatif*. Buku Ajar Perkuliahan UPI.
- Varian, H. (2014). Big Data: New Tricks for Econometricists. *Journal of Economic Perspectives*, 28(2): 3-28. <https://doi.org/10.1257/jep.28.2.3>.
- Wibowo, D. H., & Wahyuningrum, E. (2019). Pencegahan Perilaku Kecurangan Akademik: Peran Penalaran Moral dan Konsep Diri Akademik Academic Fraud Prevention. *Jurnal Ecopsy*, 6(2), 86-90.