

# Fraud Detection: Religion In The Workplace Big Data Analytics

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**Abstract:** Researchers believe everyone wants to carry out religious teachings that are adhered to in the workplace, one of which is to act honestly. From an organizational point of view, big data analytics is used to suppress fraud which still occurs frequently, so this study aims to determine the effect of religion in the workplace and big data analytics on fraud detection. The research was conducted at Shariah People's Credit Bank located in Banten Province, with a sample of 40 respondents. The data source was a questionnaire filled out by respondents. This study showed that religion in the workplace has a positive effect on fraud detection, and big data analytics has a positive impact on fraud detection. Further research is needed to test the variables of religion in the workplace and big data analytics.

**Keywords:** Religion in the Workplace; Big Data Analytics; Fraud Detection.

**Abstrak:** Peneliti menyakini bahwa setiap orang ingin menjalankan ajaran agama yang di anut di tempat kerja salah satunya bertindak jujur. Dari sisi organisasi big data analytics digunakan untuk menekan adanya fraud yang masih sering terjadi, sehingga penelitian ini bertujuan untuk mengetahui pengaruh *religion in the workplace* dan *big data analytics* terhadap pendeteksian kecurangan. Penelitian ini dilakukan Bank Perkreditan Rakyat Syariah yang berlokasi di Provinsi Banten dengan sampel sebanyak 40 responden. Sumber data adalah kuesioner yang diisi oleh responden. Hasil penelitian ini adalah religion in the workplace berpengaruh positif terhadap pendeteksian kecurangan, dan big data analytics berpengaruh positif terhadap fraud detection. Perlu penelitian lebih lanjut untuk menguji variabel *religion in the workplace* dan *big data analytics*.

**Kata Kunci:** Kepercayaan di Tempat Kerja; Big Data Analytics; Deteksi Kecurangan.

## INTRODUCTION

The first factor is due to the law in Indonesia, which seems sharp down and blunt up. Evidence of this is the minor crimes committed by the common people, such as theft on a small scale or other trivial matters. However, it seems as if the more severe crimes committed by state officials have been ignored, and the law cannot provide a deterrent effect, so the perpetrators become deterrents.

As a result, the number of perpetrators continues to grow, and they do not hesitate to engage in corruption because they will get away with it if they are proven to have committed acts of corruption. If these perpetrators are tortured or sentenced to death or life imprisonment without compromise, maybe their thoughts will be different, and they will think again before committing acts of corruption. If we believe the punishment is inhumane, consider how many starving people in this country have had their rights taken away.



The second factor is because the law in Indonesia and its enforcers are straightforward to bribe and have almost no dominance over the perpetrators. Surprisingly, judges who are already the deciders of whether someone is guilty are even so easy to bribe.

Indonesian people are known to be very religious. Based on a survey (Pew Research Center, 2020), Indonesia is the most religious country of the 34 countries surveyed. The irony is that based on Indonesia's corruption perception index in 2020, it is ranked 110, dropping from 96th in 2019 with a score of 34. At the level of countries in Southeast Asia, Indonesia's Corruption Perception Index score lags far behind Singapore, Malaysia, Timor Leste, Vietnam, and Thailand (TII, 2023). So, on the one hand, Indonesia is known for its religious people, but on the other hand, Indonesia is the most corrupt country. Many frauds occur both in government agencies and private institutions.

Fraud in the public sector, such as bribery, abuse of power, embezzlement of state property, and racketeering for influence, is a specific crime. It is reflected in corruption cases in various public sectors, which have caused enormous economic losses to the country. In addition, fraud, like corruption, can undermine public confidence in the government in power. In essence, fraud is a series of activities or actions, including irregularities and acts against the law, carried out by insiders cooperating with outsiders or, conversely, by people collaborating with insiders for personal gain or by state-owned groups that give rise to material and immaterial losses. At the beginning of 2023, the Financial Transaction Analysis Center (PPATK) released that there is a potential for Money Laundering Crimes (TPPU) of 349 Trillion committed by irresponsible persons (Yustiavandana, 2023).

Abuse of authority occurs due to the low morale of employees in an organization. In avoiding authority abuse, it is important to ensure that employees have high morale and adhere to strict ethical standards. On-going ethics training, close supervision, and effective oversight mechanisms ensure ethical violations are followed up. Organizations with employees who apply religious belief principles have great advantages. This statement is by research that states (Maqsood Sandhu, Muhammad Abrar, 2019) that religion can help improve the morality and performance of employees. The research found that more religious employees tend to be better able to practice ethical values in their work, which can ultimately enhance organizational performance. The study's results (Maureen L. Mackenzie, 2017) show that spirituality positively impacts ethical values and ethical behaviour at work. In addition, this research also shows that spirituality can help individuals to overcome ethical dilemmas in the workplace and maintain their integrity. Spirituality in the workplace was found to be a strong and consistent predictor of employee commitment. These findings emphasize the need for appropriate HR interventions to enable the congruence of personal roles and organizational goals in creating a committed workforce (Pankaj, 2019). The results showed that workplace spirituality has no effect on OCB but positively impacts organizational commitment. In addition, organizational commitment has a positive influence on OCB. The main finding is that organizational commitment is a mediating variable in the relationship between workplace spirituality and OCB (Utami, 2021).

Although many efforts have been made to prevent and detect fraud, fraud occurs frequently in private companies and government agencies. Several reasons why fraud still frequently occurs include: (1) There is no or weak internal control system, Weak or non-existent internal control systems allow fraud to occur undetected (Kurniasari *et al.*, 2019), (2) Failure to carry out adequate checks and audits, Inadequate checks and audits



inadequate, including lack of oversight and testing of the internal control system, can make a company vulnerable to fraud (Maria Florinda Parra-Sandoval, Alfonso Benavides-Velasco, 2020), (3) Absence or lack of employee training and awareness: Employees who are not properly trained or lack ethical awareness can commit fraud (Arthana, 2019). (4) Vulnerable information technology and systems: Vulnerable technology and information systems can allow fraud perpetrators to commit fraudulent acts, such as data manipulation or identity theft (Udeoji, 2020). (5) External influencing factors, such as financial pressures, opportunities, and rationalization: Factors -These factors can influence a person's behaviour and increase the risk of fraudulent activity (Rustendi, 2018).

In this era of disruption, the main factors that cause fraud are not much different from those that cause fraud in general. However, several factors are more prone to occur during a disruption period, including (Richard, 2016): (1) Greater financial pressure: The COVID-19 pandemic and the economic changes that have occurred can trigger greater financial pressure on companies and employees. It can increase the risk of fraud, especially if employees face personal financial problems or the company experiences financial difficulties. (2) More vulnerable internal controls: Changes in how things work and the use of new technology can make the internal control system more vulnerable to security holes. Fraud perpetrators can use it to commit acts of fraud, (3) Changes in organizational culture: Changes in work and the use of new technology can also affect organizational culture. Suppose the company does not have a culture that supports integrity and ethics. In that case, employees may feel compelled to commit fraud to achieve set targets, (4) Changes in company policies: Changes in company policies, such as work-from-home policies or the use of new technology, may increase the risk of fraud if the company does not have adequate policies to manage these risks.

Big Data Analytics (BDA) has been used in finance for decades. However, with the advancement of information technology and the increasing amount of data generated by companies and markets, BDA in finance has become increasingly important and widespread. One of the earliest examples of using BDA in finance was using algorithms and analytical techniques to analyze market data and predict stock price movements. This technique was first developed in the 1970s and has continued to evolve. In addition, BDA is also used in finance to analyze company financial data and identify trends and patterns that appear in financial statements. The use of analytics technology in accounting and auditing has also increased in recent years, using techniques such as sentiment analysis, cluster analysis, and machine learning. Today, BDA continues to grow and become increasingly important in finance, with many companies and financial institutions leveraging this technology to make better decisions and improve their financial performance.

The use of big data analytics has many benefits for companies and organizations, including (Gartner, 2017): (1) Identify new business opportunities: Using big data analytics, companies can analyze data to identify new business opportunities, find potential markets, and develop new products or services that can meet consumer needs. (2) Improve operational efficiency: Big data analytics can help companies optimize their business operations by processing large, complex data in real-time. It allows companies to make faster and more timely business decisions, saving time and operational costs. (3) Improve customer experience: Using big data analytics, companies can analyze data to understand customer behaviour, preferences, and needs. This allows companies to customize their products and services to customer needs and provide a better experience. (4) Reduce



business risks: Big data analytics can help companies identify risks such as fraud or operational failures. By processing data at scale, companies can identify trends and patterns that cannot be discovered in traditional ways. (5) Improve decision quality: Big data analytics can help companies make more informed and data-driven business decisions. They were analyzing data at scale to help them make better and more accurate decisions.

Big Data Analytics (BDA) is essential for investors, management, and company owners. The crucial roles of big data analytics are: (1) Investors: BDA can help investors make better investment decisions by analyzing relevant and accurate data about companies. By leveraging big data and analytics technology, investors can identify trends, patterns, and market behaviour that can help them make smarter investment decisions and reduce risk, (2) Management: BDA can assist company management in making better decisions by analyzing data resulting from various aspects of the company's operations, including marketing, finance, logistics, and human resources. By utilizing analytics technology, management can identify emerging trends and patterns in company data and take more rapid and appropriate action, and (3) Company owners: BDA is also important for company owners because it can help them monitor company performance in real-time. By utilizing analytical technology, company owners can make faster and more precise decisions to increase the efficiency and effectiveness of the company's operations (Kumar, 2018).

In a broader context, BDA is also important for other stakeholders, such as customers, suppliers, and regulators, as it can help them identify emerging trends and patterns in the market and take more rapid and appropriate actions.

The concept of "religion in the workplace" was known in Indonesia in the 2000s, especially after the government issued regulations regarding implementing religious activities in the workplace in 2006. This regulation regulates the rights and obligations of companies and employees in practising religious beliefs and religious activities in the workplace and protects against discrimination based on religion. In addition, the concept of "religion in the workplace" has also been increasingly recognized in Indonesia in recent years, primarily because more and more companies realize the importance of paying attention to employees' spiritual and religious needs in creating a healthy and harmonious work environment.

Religion in the workplace has become an increasingly important topic in today's business context. The concept of religion in the workplace can have a positive impact on companies, such as:

**Strengthening corporate integrity:** According to (Miller, 2016), the concept of religion in the workplace can help strengthen corporate integrity. It is because the concept encourages employees to appreciate and practice positive moral and ethical values in the work environment.

**Fostering a sense of belonging:** According to (Capehart, 2016), the concept of religion in the workplace can also help promote a sense of belonging and a strong emotional bond between employees and the company. Employees who feel they have a strong emotional bond with the company are usually more motivated to work well and contribute positively to its success.

**Increase productivity:** According to (Stevens, 2018), the concept of religion in the workplace can increase employee productivity. It is because the concept can help



employees feel more satisfied with their jobs and feel more connected to the goals and values of the company.

**Help management in decision-making:** According to (Murphy, 2018), the concept of religion in the workplace can also help management in decision-making. It is because the concept promotes holistic and comprehensive thinking about the decisions taken, including their impact on society, the environment, and other stakeholders.

**Fostering an inclusive work culture:** According to (Chang et al., 2022), the concept of religion in the workplace can also help foster an inclusive work culture. It is because the concept encourages respect for differences and diversity and promotes productive cooperation and collaboration among employees with different backgrounds and beliefs.

**Work-life and religious balance is essential for today's employees.** Recognition and support for the need for employees to carry out religious practices and maintain a balance between work life and spiritual life within an organization can prevent corrupt behaviour. Research (Simson, 2018) and (Mueller-Hanson, Heggstad, 2017) found that a balance between spiritual needs and work needs, including ethical and moral values reinforced by spiritual practices, can help prevent corrupt behaviour in the workplace. Employees with high spiritual satisfaction tend to be more committed to ethical values and have a more honest and less dishonest attitude. Based on some of these studies, the novelty of this research is to add indicators of work-life balance and religion in the moral value dimension, which aims to increase fraud detection.

## **THEORETICAL REVIEW**

**Religion in the workplace.** Religion in the workplace is a concept related to how a person's religion and personal beliefs influence their actions at work. According to (Héliot et al., 2020), religion in the workplace can be defined as integrating employees' religious values and beliefs into their work environment. It can be realized in various forms, such as setting work schedules that pay attention to employees' spiritual needs or providing facilities to carry out worship in the workplace. According to (Cavusgil, 2017), religion in the workplace is an effort to create a work environment that respects and accommodates employees' religious beliefs as part of the organizational culture. This can improve employee performance and provide benefits to the company. According to (Miller, 2016), religion in the workplace can be interpreted as recognition and respect for employees' religious values and integrating these values into company actions and policies. It can create an inclusive work environment and encourage employees to achieve common goals more effectively.

In general, "religion in the workplace" is a concept that refers to efforts to accommodate the spiritual and religious needs of employees in the work environment, as well as integrating religious values into the organizational culture. It can provide benefits for employees and the company as a whole.

Dimensions of research on religion in the workplace variables (Kristin et al., 2020), including (1) Moral values: This dimension includes how a person's religious beliefs influence their moral values, how those values influence their actions at work and work-life balance and religion. (2) Spiritual leadership: This dimension includes how leaders who share certain religious beliefs lead and motivate their employees and how the influence of spiritual leadership can enhance employee performance. (3) Ethical behaviour: This dimension covers how a person's religious beliefs influence their ethical



behaviour at work, including how they avoid unethical behaviour and create a fair work environment. (4) Employee engagement: This dimension includes how employees with certain religious beliefs feel involved and connected to their companies and how the company can facilitate greater employee engagement. (5) Tolerance and respect: This dimension includes how a person's religious beliefs can influence how they perceive cultural and religious differences and how companies can promote tolerance and respect for these differences in the workplace.

The research conducted by (Ann-Sophie Hansson, 2016) found that religion can influence employees' perception of organizational integrity. The study showed that employees with strong religious beliefs tend to have a more positive view of their organization's integrity and therefore are more likely to report fraud or misconduct they witness in the workplace.

This study (Zhang, Li, 2021) used data from 1,067 companies listed on the China stock exchange between 2013 and 2017. The results showed that ethical leadership was negatively related to financial statement fraud incidents. Furthermore, the study also indicated that ethical leadership positively impacted the disclosure of company risks and the quality of financial reporting. Thus, this study demonstrates that ethical leadership can be important in preventing financial statement fraud in listed companies. It highlights the importance of ethics in business practices and good company leadership.

This study involved 132 Korean University students as participants and used a simulated fraud scenario to measure their ability to detect fraud. The participants' moral identity was measured using a questionnaire that asked them to evaluate the extent to which they perceived certain moral values such as honesty and fairness. The study results showed that participants with stronger moral identities were more likely to detect fraud in the simulated scenario. When evaluating the fraud situation, participants who consciously thought about moral values were also more likely to detect fraud. This study highlights the importance of moral identity in influencing individuals' ability to detect fraud. It can provide new insights into how to enhance companies' ability to prevent fraud and promote ethical business practices (Song, Kim, 2020).

The research findings indicate that moral intensity significantly negatively impacts fraud intention, meaning that the higher a person's moral intensity, the lower their intention to commit fraud. The study also found that gender influences moral intensity and fraud intention. Women tend to have higher moral intensity than men and have lower fraud intentions. This study provides new insights into the factors that influence fraud intentions and highlights the importance of ethics and morals in preventing fraud within organizations (Salim, 2019).

**Big data analytics.** Big data analytics is a process of collecting, processing and analyzing data on a large scale to reveal patterns, trends, and valuable information contained in the data. Here is the definition of big data analytics according to some experts: According to (Doug, 2018), big data analytics is "a technology used to extract insights from very large and complex data sets-that traditional systems cannot handle." According to (David, 2018), big data analytics is "the process of collecting, processing, and analyzing data on a large scale to identify patterns, relationships, and information that can be used for " decision-making.". According to (Neil, 2018), big data analytics is "the process of using analytical techniques and algorithms to reveal patterns and valuable information contained in large and diverse data".



In all these definitions, big data analytics processes complex and large data to reveal valuable and helpful information for business decision-making.

The use of big data analytics has many benefits for companies and organizations (Thomas, 2017), and (Bernard, 2016), including:

**Identify new business opportunities:** Using big data analytics, companies can analyze data to identify new business opportunities, find potential markets, and develop new products or services that meet consumer needs.

**Improve operational efficiency:** Big data analytics can help companies optimize their business operations by processing large, complex data in real time. It allows companies to make faster and more timely business decisions, saving time and operational costs.

**Improve customer experience:** Using big data analytics, companies can analyze data to understand customer behaviour, preferences, and needs. It allows companies to customize their products and services to customer needs and provide a better experience.

**Reduce business risks:** Big data analytics can help companies identify risks such as fraud or operational failures. By processing data at scale, companies can identify trends and patterns that cannot be discovered in traditional ways.

**Improve decision quality:** Big data analytics can help companies make more informed and data-driven business decisions. Companies can identify trends and patterns by analyzing data at scale to help them make better and more accurate decisions.

Big data analytics significantly benefit companies and organizations, including increasing operational efficiency, identifying new business opportunities, and improving customer experience.

The variable research dimensions of Big Data Analytics (Doug, 2018) can be explained as follows:

**Volume:** Volume in Big Data Analytics relates to the amount of data generated or collected. The data collected can be so large and complex that it requires special techniques and tools to manage it.

**Speed:** Speed in Big Data Analytics refers to the ability to process data quickly and promptly. Data can be entered and processed in real-time or near real-time so that organizations can act or make decisions quickly.

**Variation:** Variation in Big Data Analytics relates to the different data types generated and collected. Data can be text, audio, video, or images from various sources and formats.

**Veracity:** Veracity in Big Data Analytics refers to data's truth, accuracy, and quality. Only accurate and reliable data can lead to correct decisions and harm the organization.

**Value:** Value in Big Data Analytics refers to the benefits drawn from the data. Data can generate valuable information and lead to better actions or decisions.

**Variability:** Variability in Big Data Analytics refers to the fluctuations and changes in the data. Data can change over time, and managing changes and fluctuations in data is very important in Big Data Analytics.

Overall, the dimensions of Big Data Analytics include volume, speed, variety, integrity, value, and data variability. It demonstrates the complexities and challenges of managing and analyzing big data and offers great potential in generating useful information and adding value to organizations.

**Fraud detection.** Fraud detection or fraud detection is the process of identifying potential fraud, deception, or other unauthorized activity in data and information owned



by an organization. Following are some definitions from experts regarding fraud detection: According to (ACFE, 2019), fraud detection is an activity to detect fraud in business or other organizational activities using analytical and investigative techniques. According to (Chang et al., 2022), fraud detection collects, analyzes, and interprets information to detect potential fraud. According to (COSO ERM, 2017), fraud detection is the process of technology and data analysis to identify suspicious patterns and examine business transaction activities. In general, fraud detection is essential in preventing and detecting fraud that can harm an organization. This process involves collecting and analyzing accurate and reliable data to identify indications of fraud or violations that may occur.

Fraud detection research variables have several dimensions (Albrecht et al., 2018), including:

**Data Quality:** This dimension emphasizes the accuracy, adequacy, and accuracy of the data used in the fraud detection process. Data quality can lead to the correct identification of suspicious transactions or behaviour.

**Technology.** This dimension relates to the technology used in fraud detection, such as software and systems that support data collection, analysis, and visualization to detect suspicious patterns and anomalies.

**Data analysis.** This dimension emphasizes the ability to analyze data effectively, using clustering, regression, and machine learning techniques to identify suspicious patterns and behaviour.

**Analyst team.** This dimension includes the capabilities and skills of the analyst team in managing and analyzing data for fraud detection. A team of trained analysts can help increase the effectiveness of fraud detection.

**Policies and Procedures.** This dimension includes organizational policies and procedures related to fraud detection, such as reporting and investigation procedures. Clear and effective policies and procedures can help better prevent and detect fraud.

Detection of fraud or cheating can be done using various methods and techniques (Wells, 2017), including:

**Data analysis.** Data analysis can be performed using algorithms and machine learning techniques to identify patterns and anomalies in financial data that could indicate fraud or fraud.

**Internal investigation.** The internal research is carried out by conducting an internal audit of the company's business and financial processes to identify weaknesses in the internal control system and uncover fraudulent acts.

**Forensic examination.** Forensic examination is carried out using forensic investigative techniques, such as digital fingerprint analysis and computer analysis, to collect evidence and information that can be used to detect fraudulent acts.

**Examinations by third parties.** Third parties, such as independent auditors or investigative consultants, can help detect fraudulent acts using more detailed and objective techniques and methods.

**Use of technology.** Technology such as auditing and monitoring software can help detect fraud by collecting and analyzing financial transaction data in real time.

Overall, fraud detection can be carried out by various methods and techniques, and companies can choose a technique that suits their needs and business characteristics.

Research on the influence of big data analytics and religion in the workplace on fraud detection is still limited, and little has been done. However, it can be concluded that big data analytics can help improve fraud detection capabilities by accelerating the





identification of patterns and anomalies in large and complex data. Meanwhile, religion in the workplace can help encourage employees to comply with the ethics and moral values that apply in the company so that it can help prevent fraud.

In the context of using big data analytics for fraud detection, this technology can help collect and analyze broader, more in-depth data than manually. By using suitable algorithms and data mining techniques, big data analytics can help identify abnormal patterns and suspicious actions in data related to financial transactions and company operations. For example, big data analytics can identify suspicious transaction patterns, such as a sudden increase in certain employees or transactions made at unusual times. Meanwhile, religion in the workplace can help create a corporate culture based on sound ethics and morals. In such an environment, employees tend to comply more with the rules and values that apply in the company, including regulations relating to acts of fraud. In addition, the trust built in such an environment can help employees report fraudulent acts that occur more quickly and accurately.

However, remember that big data analytics and religion in the workplace are not the only factors affecting fraud detection capabilities. There are still many other factors, such as the strength of the company's internal control system, adequate checks and audits, and training and ethical awareness of employees, which can also affect fraud detection abilities. Therefore, an integrated and comprehensive approach is needed to prevent and detect fraud.

Developmental hypothesis. Religion in the workplace plays an essential role in fraud detection. Big data analytics has a positive impact on fraud detection.

**H1:** Religion in the workplace has a positive effect on fraud detection.

Research on the influence of religion in the workplace on fraud detection is still relatively small. However, several studies indicate that religion in the workplace can positively reduce fraud or cheating within the company. One of the studies showing this is the research conducted by (Mohamed Elsaied., Hoda M. Onsi., Shaimaa M. Abdelmageed., 2020), who sampled 121 public companies in Egypt. The results of this study indicate that companies that implement religion in workplace practices have lower fraud rates than companies that do not. Another study conducted by (Norhayati et al., 2017) shows that the practice of religion in the workplace can affect the morality and integrity of employees in doing their work so that it can help reduce the tendency for fraud to occur. This research shows that there is a significant and positive relationship between spirituality in the workplace and organizational commitment and civic behaviour. In addition, Organizational Commitment also has a positive impact on Citizenship Behavior. Positive behaviour will directly impact reducing fraud (Mehran, 2017). However, consider that several factors, such as corporate culture, leadership, and external environmental factors, can influence the influence of religion in the workplace on fraud detection. Therefore, further research is needed to confirm the effect of faith in the workplace on fraud detection more comprehensively. Therefore, further research is required to confirm religion's influence in the workplace more comprehensively on fraud detection.

**H2:** Big Data Analytics has a positive effect on fraud detection



Research on the use of big data analytics in fraud detection. Following are some examples of related research: Research conducted by (Qianwen Liu et al., 2018) regarding using big data analytics in fraud detection at insurance companies. The study results show that using big data analytics can increase effectiveness and efficiency in detecting fraud. Research conducted by (Hyoung-gon et al., 2019) regarding using big data analytics in fraud detection in the banking industry. The study results show that using big data analytics can increase effectiveness and efficiency in detecting fraud. Research conducted by (Xiaoyu Wang and Bo Zhou, 2020) regarding the use of big data analytics in fraud detection in retail companies. Big data analytics could identify suspicious patterns in sales transactions and improve the detection of fraud. Increased use of big data analysis techniques such as machine learning, deep learning, and natural language processing in financial research focuses on addressing financial risks, including credit, market, and operational risks. So fraud is very suitable if detected with big data analytics (Yingru Li, 2020). Big data analytics can also be used to analyze investor decisions in investing in stocks in the capital market (Nitin, 2022).

These studies show that using big data analytics can improve effectiveness and efficiency in detecting fraud. It can help organizations more quickly and effectively identify fraud occurring and take appropriate action to prevent greater losses.

## METHODS

The subjects in this study were all employees and information technology systems in companies at the Directorate General of Taxes. The research object is the influence of religion in the workplace and the use of big data analytics on a company's ability to detect fraud within the organization. This research can involve financial reports, system activity logs, transaction records, and employee data.

The complete operationalization of research variables can be seen in **Table 1**.

**Table 1.** Variable operationalization

Variable	Dimensions	Indicator	Scale
Religion in the Workplace	Moral values	Religious beliefs affect moral values	Ordinal
		Moral values influence actions in the workplace	Ordinal
		work-life balance and religion	Ordinal
		Leaders have certain religious beliefs	Ordinal
	Spiritual Leadership	The influence of spiritual leadership can improve employee performance	Ordinal
		Religious beliefs influence ethical behaviour	Ordinal
	Ethical behaviour	Religious beliefs create a fair work environment	Ordinal
		Employees have religious beliefs	Ordinal
	Employee Engagement	Employees have a strong bond with the organization	Ordinal

Big data analytics	Volume	Organizations can provide facilities for employee engagement	Ordinal
		The amount of data is very large and complex	Ordinal
		Huge amount of data	Ordinal
	Speed	The small amount of data	Ordinal
		Process data quickly	Ordinal
	Variation	Process data promptly	Ordinal
		Text	Ordinal
		Audio	Ordinal
		Video	Ordinal
	Veracity	Picture	Ordinal
Truth		Ordinal	
Mark Variability	accuracy	Ordinal	
	Data quality	Ordinal	
	Benefit	Ordinal	
Data Quality	Fluctuation	Ordinal	
	accuracy	Ordinal	
	Adequacy	Ordinal	
Technology	Data Accuracy	Ordinal	
	Software	Ordinal	
Fraud Detection	Support system	Ordinal	
	Data analysis	Effective	Ordinal
	Analyst team	Analysis team skills	Ordinal
		Knowledge analysis team	Ordinal
Policies and Procedures	Reporting procedure	Ordinal	
	Investigation procedures	Ordinal	
	Clear procedures	Ordinal	
		Effective procedure	Ordinal

Source: primary data processed

**Table 1** shows that the religion research variables in the workplace have research dimensions, namely 1) moral values, 2) spiritual leadership, 3) ethical behaviour, and 4) employee engagement. The indicators for each dimension are as follows. The dimension of moral values has indicators: 1) religious beliefs affect moral values, and 2) moral values influence actions in the workplace. The dimension of spiritual leadership has indicators; 1) leaders have certain religious beliefs, and 2) the influence of spiritual leadership can improve employee performance. The ethical behaviour dimension has indicators; 1) religious beliefs influence ethical behaviour, and 2) religious beliefs create a fair work environment. The employee engagement dimension has indicators; 1) employees have religious beliefs, 2) employees have a strong bond with the organization, and 3) the organization can provide facilities for employee involvement.

The big data analytics research variable has research dimensions, namely; 1) volume, 2) speed, 3) variety, and 4) veracity. 5) value, and 6) variability. The volume dimension has indicators, namely, 1) the amount of data is very large and complex, 2) the amount of data is large, and 3) the amount of data is small. The speed dimension has indicators, namely, 1) process data quickly and 2) promptly. The variation dimension has indicators, namely; 1) text, 2) audio, 3) video, and 4) images. The veracity dimension has indicators, namely, 1) truth, 2) accuracy, and 3) data quality. The value dimension has an indicator, namely benefits, and the variability dimension has an indicator, namely fluctuation.



Fraud detection research variables have research dimensions, namely; 1) data quality, 2) technology, 3) data analysis, 4) analysis team, and 5) policies and procedures. The data quality dimension has indicators, namely, 1) accuracy, 2) adequacy, and 3) data accuracy. The technology dimension has indicators, namely, 1) software and 2) support systems. The dimension of data analysis has an effective indicator. The analysis team dimension has indicators, namely, 1) the skills of the analysis team and 2) the knowledge of the analysis team. The policy and procedure dimension has research indicators, namely, 1) reporting procedures, 2) investigative procedures, 3) clear procedures, and 4) effective procedures.

**Population and Sample.** The population in this study are Rural Banks located in Banten Province. The research sample is Islamic People's Credit Banks (BPRS), totalling 8 BPRS. Five people representing each BPRS filled out the questionnaire provided, so-the total sample in this study was 40 research samples.

**Data analysis technique:** This research is descriptive quantitative research. Descriptive quantitative research is a method that aims to create an objective picture or description of a situation using numbers, starting from data collection, interpretation of the data as well as the appearance and results.

Test criteria: T count more than T table and  $\alpha$  less than 0.050: The hypothesis is accepted, and T count less than T table and  $\alpha$  more than 0.050: The hypothesis is rejected.

## RESULTS

**Descriptive Statistics.** The questionnaire the respondents filled in then calculated the lowest value, the highest value, the average value, the median value, the frequently occurring value, and the standard deviation value. This descriptive statistic is used to determine the tendency of respondents to influence religion in the workplace and big data analytics on fraud detection.

**Table 2.** Research Variable Descriptive Statistics

Research Variables	Obs	Min	Max	Mean	Median	Modus	Standard Deviasi
Religion in the workplace	40	1	6	4.840	5	5	0.567
Big data analytics	40	2	6	5.150	5	6	1.365
Fraud Detection	40	2	6	5.100	6	6	1.309

Description:  
 Exogenous variable: religion in the workplace, big data analytics  
 Endogenous variable: Fraud detection

Source: primary data processed in 2023

**Table 2** shows to explain that, in general, the questionnaire was filled in by 40 respondents with each research variable which can be defined as follows; the minimum value of the religion in the workplace variable is 1, the maximum value is 6, the average value is 4.840, the median value is 5, the value that occurs frequently is five and the standard deviation value is 0.567. Big data analytics variable based on data from respondents, the minimum value is 2, the maximum value is 6, the average value is 5.150, the median value is 5, the frequently occurring value is 6, and the standard deviation value is 1.365. Based on data from respondents, the fraud detection variable has a minimum value of 2, a maximum value of 6, an average value of 5.100, a median value of 5, a value



that occurs frequently is 6, and a standard deviation value of 1.309. The data distribution in the study was stated to be good because the average value of the research variables was greater than the standard deviation value.

**Table 3.** Frequency Distribution of Research Variables

Research Variables	Value/Score					
	1	2	3	4	5	6
Religion in the workplace	0.002	0.009	0.009	0.240	0.560	0.180
<i>Big data analytics</i>	0.000	0.040	0.060	0.130	0.300	0.470
Fraud Detection	0.000	0.010	0.150	0.170	0.280	0.390

Source: primary data processed in 2023

**Table 3** describes the respondents' responses to the research variables given and then the respondents' contents. Religion variable in the workplace, respondents who answered on a scale of 1 were 0.002, those who answered on a scale of 2 were 0.009, those who answered on a scale of 3 were 0.009, those who answered on a scale of 4 were 0.240, those who answered on a scale of 5 were 0.560, and those who answered a scale of 6 were 0.180. Big data analytics variable, respondents who answered on a scale of 1 were 0.000, those who answered on a scale of 2 were 0.040, those who answered on a scale of 3 were 0.060, those who answered on a scale of 4 were 0.130, those who answered on a scale of 5 were 0.300, and those who answered a scale of 6 were 0.470. Fraud detection variable, respondents who answered on a scale of 1 were 0.000, those who answered on a scale of 2 were 0.010, those who answered on a scale of 3 were 0.015, those who answered on a scale of 4 were 0.170, those who answered on a scale 5 were 0.280, and those who answered on a scale 6 were 0.390.

**Research Data Analysis. Outer Model.** The research instrument can be used as a basis for concluding if the instrument has a level of validity and reliability. The instrument is valid if the AVE and Loading factor values exceed 0.500. The full value can be seen in **Table 4**.

**Table 4.** Outer Model

Variables		Outer Loading	AVE	Cronbach's Alpha	Rho_A	Composite Reliability
RITW	Exogenous Variable	0.654 to 0.962	0.652	0.912	0.948	0.734
BDA	Exogenous Variable	0.568 to 0.896	0.724	0.936	0.956	0.718
FD	Endogenous Variable	0.724 to 0.961	0.618	0.946	0.946	0.732

**Table 4** shows above describe the values of validity and reliability. The AVE value and loading factor indicate the validity value. The reliability value is shown by Cronbach's Alpha, Rho\_A, and Composite Reliability. The loading factor value for the religion in the workplace variable is between 0.654 to 0.962, the big data analytics loading factor value is between 0.568 to 0.896, and the fraud detection factor loading value is between 0.724

to 0.961. The AVE value of the religion variable in the workplace is 0.652, the AVE big data analytics value is 0.724, and the AVE fraud detection value is 0.618. The loading factor and AVE values are greater than 0.500, so this research instrument is declared to have perfect validity.

The Cronbach's Alpha (CA) value for the religion in the workplace variable is 0.912, the Alpha value for the big data analytics variable is 0.936, and the Alpha value for the fraud detection variable is 0.946. The Rho\_A (RA) value for the religion in the workplace variable is 0.948, the Rho\_A value for the big data analytics variable is 0.956, and the Rho\_A value for the fraud detection variable is 0.946. The composite reliability (CR) value of the region in the workplace variable is 0.734, the composite reliability value of the big data analytics variable is 0.718, and the composite reliability value of the fraud detection variable is 0.732. All research variables have fulfilled the test instrument requirements based on the CA, RA, and CR values.

**Hypothesis Result.** Hypothesis testing criteria: If the t-count is more than the t-table and  $\alpha$  less than 0.050: accepted, and if the t-count is less than the t-table and  $\alpha$  more than 0.050: rejected. The complete results of the hypothesis test can be seen in **Table 5**.

**Table 5.** Hypothesis testing

Variable	Prediction	O	M	STDEV	T Statistics	P Values*	R Square	Decision
RITW -more	+	0.284	0.286	0.036	4.965	0.000	0.628	H1 is
BDA -more	+	0.217	0.216	0.028	4.328	0.000		H2 is

\*Significance level: 0.050

Source: primary data processing, 2023

**Table 5** shows that the religion variable in the workplace positively affects fraud detection. The value of religion in the workplace is 0.284, with a statistical t-value of 4.965 and a significance value of 0.000. Variable big data analytics also has a good impact on fraud detection. The big data analytics value is 0.217, and the t statistical value is 4.328 with a significance level 0.000. The religion variable in the workplace and big data analytics can impact fraud detection by 0.628.

The regression equation from the hypothesis test in **Table 5** is as follows:

$$FD = 0.284RITW + 0.217BDA \dots \dots \dots (1)$$

The coefficient value of religion in the workplace variable is 0.284, and the significance value is less than 0.050, so it is stated that faith in the workplace variable positively affects fraud detection. Hypothesis H1: accepted. The big data analytics variable has a coefficient value of 0.217, and its significance value is below 0.050, so it can be concluded that the big data analytics variable has a positive effect on fraud detection, hypothesis H2: accepted.

The fraud detection variable is influenced by the variable religion in the workplace and big data analytics by 0.628 or 62.800 per cent. According to (Hair Jr *et al.*, 2019), R Square, which is between 0.500 to 0.750, is moderate, so exogenous variables have a moderate impact on endogenous variables. Even though it has a moderate effect on endogenous variables, companies need to consider that religion in the workplace can



become a new culture in the organization so that employees have an awareness of rights and obligations, halal and haram, so that fraud that often occurs can be reduced.

## DISCUSSION

Based on the results of hypothesis testing, all research variables are positive. This research is based on data and events in the research sample organization. The hypothesis test results above can be used as material for discussion as follows.

**The Influence of Religion in the Workplace on Fraud Detection.** The value of religion in the workplace is 0.284 with, and statistic value of 4.965 and a significance value of 0.000, so the variable religion in the workplace has a positive and significant effect on fraud detection. A religious environment can have a positive impact on fraud reduction. Some factors that might explain the relationship are: Adherence to religious norms: Religious environments often enforce religious values and norms prohibiting cheating or dishonesty. Adherence to these norms can make individuals more willing to comply with rules and avoid fraudulent behaviour. Sense of moral responsibility: Individuals who grow up in a religious environment are often encouraged to have a strong sense of moral responsibility. It can make individuals more careful in making decisions and considering the impact of their actions on others. Increased oversight: Religious wards often have strict control structures over the behaviour of their members. It can limit opportunities to commit fraudulent acts and increase the risk of being caught if we do. Religious beliefs can provide moral and ethical guidance to help make the right decisions and avoid dishonest or rule-breaking behaviour in the workplace. Therefore, religion can play a positive role in shaping responsible values and attitudes in the workplace. Thus, this can help reduce the risk of fraud or misconduct in the workplace. However, detecting and preventing fraud requires appropriate policies, procedures, and tools and careful supervision and auditing by management and authorized parties. Emphasis on honesty: Religions often emphasize the importance of honesty and integrity. It can make individuals feel more compelled to behave honestly and avoid fraud. Employees who implement religious values are successful in helping fraud detection in their organizations.

Religion provides a moral framework and ethical guide to help individuals make dignified decisions and navigate complex ethical dilemmas in the workplace. Religion offers a set of values and principles that encourage integrity, honesty, justice, and compassion. Faith is critical in shaping a sense of belonging and inclusiveness in today's diverse workforce. Adopting various religions in the workplace enables the expression of different beliefs and practices, promoting a culture of acceptance and appreciation of different perspectives. Religion can contribute to employee well-being by addressing spiritual needs and providing a sense of purpose, meaning, and fulfilment. Religion can provide reassurance, support, and a sense of community, enhancing employees' mental, emotional, and spiritual well-being. Religion can serve as a guide for ethical decision-making in a business context. Religion encourages individuals to consider the broader impact of their actions, prioritize the common good, and adhere to ethical principles, which lead to responsible and sustainable business practices. Religions often emphasize the importance of social responsibility, including caring for others, promoting justice, and addressing social problems. Faith can inspire companies to engage in socially responsible initiatives, such as philanthropy, environmental sustainability, and community development. Religion can contribute to shaping culture and values in an organization.



Faith can establish a positive work environment based on mutual respect, trust, and fairness, increasing employee satisfaction, engagement, and loyalty. According to the research (Amalia et al., 2019) and (Ananda et al., 2016), religious employees greatly assist in fraud detection.

The results align with the research conducted by (Yuval Arbel and Ronen Bar-El, 2017) found that students who often participate in religious activities tend to be more honest in taking academic tests than those who do not. Participation in religious activities can strengthen moral and ethical values and provide positive social influence in an environment that supports integrity. In addition, research conducted by (Paul and Jesse, 2016) and (Gunawan et al., 2022) shows that people who participate more frequently in religious activities tend to be more generous and less likely to commit fraudulent acts in games that require cooperation. Participation in religious activities can strengthen moral and ethical values and provide positive social influence in an environment that supports integrity. Research by (Elsaied et al., 2020) sampled 121 public companies in Egypt. The results of this study indicate that companies that implement religion in workplace practices have lower fraud rates than companies that do not. Another study conducted by (Norhayati et al., 2017) shows that the practice of religion in the workplace can affect the morality and integrity of employees in doing their work so that it can help reduce the tendency for fraud to occur.

The results of this study are different from the research (Treviño, 2017) concludes that religion is not always a significant factor in preventing unethical behaviour in the workplace. They demonstrate that other factors, such as social norms, job pressures, and financial demands, also play a crucial role in ethical conduct. Research (Premeaux, 2018) found that aspects of spirituality, including religion, are not directly related to the level of misconduct in the workplace. They indicated that organizational culture, fairness, and job satisfaction have a greater influence. Research (Anaza and Rutherford, 2018) entitled "Exploring the Role of Religion in Ethical Decision Making in Business" shows that the level of individual religiosity is not consistently related to ethical behaviour in the workplace. They found that factors such as commitment to the organization, social norms, and awareness of ethical consequences had a more significant influence.

However, consider that several factors, such as corporate culture, leadership, and external environmental factors, can influence the influence of religion in the workplace on fraud detection. Therefore, further research is needed to confirm the influence of religion in the workplace on fraud detection more comprehensively. Companies must consider religion in the workplace to improve fraud detection and organizational performance.

**The Effect of Big Data Analytics on Fraud Detection.** The big data analytics variable has a coefficient value of 0.217, and its significance value is below 0.050, so it can be concluded that it has a positive and significant effect on fraud detection. By using big data analytics, companies or organizations can process large and complex amounts of data quickly and, using suitable algorithms, can generate valuable insights in finding hidden patterns and anomalies. For example, credit card companies can use big data analytics to monitor credit card transactions and identify unusual or suspicious usage patterns.

Big data analytics can also assist in preventing fraud in the financial sector by identifying suspicious or inappropriate behaviour in financial transactions. For example, big data analytics algorithms can spot unusual transactions, such as money transfers to unregistered accounts or large transfers at unusual times. However, it is important to





remember that big data analytics has limitations and risks. One of the risks is that it can cause privacy and data security concerns if not managed properly. Therefore, organizations using big data analytics must comply with applicable data privacy and security rules and obtain consent from the relevant parties before processing data.

Big data analysis can collect, store and analyze huge amounts of data from various sources. This enables the use of more comprehensive and in-depth data to detect patterns and anomalies that indicate acts of fraud. With big data analysis, data can be analyzed in real-time or near real-time. This enables rapid fraud detection and responsiveness to events that occur in the business environment. Big data analysis uses algorithms and advanced analytical techniques, such as machine learning and data mining, to identify complex patterns and hidden relationships among enormous data. Thus, it can reveal patterns of fraud that are difficult to detect with traditional methods. Big data analysis allows combining data from various sources, including internal company data, external data, and data from other digital platforms. The integration of this data can provide a more holistic understanding of behaviour and trends related to fraud. Using big data analysis, predictive models can be developed that can estimate potential fraud in the future. Thus, preventive steps can be taken to prevent fraud from occurring before losses occur. Big data analysis can automate data analysis processes that were previously done manually. This can save time and costs associated with data collection, storage, and research and reduce the human risk of detecting fraud.

This research (KPMG, 2018) found that companies that use big data analytics in their internal controls tend to have a lower level of fraud than companies that do not. The research also shows that big data analytics companies can detect fraud faster and more accurately than companies that do not. The Association of Certified Fraud Examiners (ACFE, 2019) found that using big data analytics technology can significantly reduce fraud in organizations. In the study, companies that used big data analytics in fraud detection reported lower fraud rates than companies that did not use this technology.—Research conducted by (Qianwen et al., 2018) regarding using big data analytics in fraud detection at insurance companies shows that using big data analytics can increase effectiveness and efficiency in detecting fraud. Research conducted by (Hyoung et al., 2019) regarding using big data analytics in fraud detection in the banking industry,—shows that big data analytics can assist in identifying fraud indicators and improving performance in detecting fraud. Research conducted (Xiaoyu and Zhou, 2020) regarding the use of big data analytics in fraud detection in retail companies shows that big data analytics can be used to identify suspicious patterns in sales transactions and increase the effectiveness of detecting fraud.

Different results from the study (Kogan et al., 2017) entitled "Can Big Data Analytics Improve Audit Quality?" found that although big data analytics can contribute to improving audit quality, it does not significantly improve fraud detection in the audit process. Research (Lei Wu, 2018) entitled "The Impact of Big Data Analytics on Audit Quality and Audit Efficiency" also shows that the use of big data analytics in the audit process does not provide a significant increase in detecting fraud. Research (Knechel et al., 2018) entitled "Auditing in the era of Big Data: A critical review of Big Data challenges for Auditing" revealed that although big data analytics has the potential to detect fraud, there are technical, organizational, and ethical challenges that must be overcome to optimize its use.



Based on the research results above, organizations in today's digital era must use big data analytics for fraud detection. Big data analytics can detect fraud more quickly and efficiently so that the image of the organization becomes better in front of stakeholders.

However, even though big data analytics can help reduce fraud, it is not guaranteed to be eliminated. Companies still need to equip this technology with effective internal policies, procedures, and controls to minimize the risk of fraud occurring. In addition, using big data analytics in fraud detection can also pose data privacy and security risks, so companies need to pay attention to this.

## CONCLUSION

The religion variable in the workplace has a positive impact on fraud detection. Organizations operating in a religious environment can have several advantages in reducing fraud compared to non-religious organizations. Some of the reasons that might cause this include: ethical values instilled in religion can form an ethical organizational culture. In religious circles, there is often a strong emphasis on honesty, fairness, integrity, and social responsibility. These values can shape a corporate culture based on strong ethical principles and increase the likelihood that employees will follow those principles; Religious employees tend to have a stronger moral orientation. Research shows that employees with an active spiritual life tend to have a stronger moral orientation. They are more inclined to act ethically and avoid detrimental actions to the organization. Employees with these strong moral values can help reduce fraud in the organization, and there is likely less pressure to commit fraud. In religious circles, cheating is often considered a serious ethical violation and violates religious law. Religious employees may feel burdened by their moral responsibility to act ethically and may be less inclined to commit fraud.

The big data analytics variable has a positive impact on fraud detection. Big data analytics can help reduce fraud by improving fraud detection, speeding up fraud response, reducing fraud costs, and increasing the effectiveness of internal controls. Big data analytics is good to implement in organizations or companies to suppress fraud, but this does not guarantee that fraud will be eliminated. Companies still need to equip this technology with effective internal policies, procedures, and controls to minimize the risk of fraud occurring. In addition, using big data analytics in fraud detection can also pose data privacy and security risks, so companies need to pay attention to this.

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