



THE INTERPLAY OF ETHICAL LEADERSHIP, ORGANIZATIONAL CULTURE, AND INDIVIDUAL MORALITY IN THE CHEMICAL INDUSTRY: STRATEGIES TO COUNTERACT FRAUDULENT PRACTICES

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Abstract

This study examines the interplay of ethical leadership, organizational controls, and individual morality in the chemical industry, focusing on strategies to counteract fraudulent practices. Recognizing the chemical industry's crucial role in global supply chains, this research emphasizes the importance of ethical leadership in shaping the industry's strategic and operational aspects and influencing its ethical climate. The study explores the consequences of ethical breaches, highlighting those beyond financial repercussions, such as breaches can result in significant environmental, health, and safety hazards. The research adopts a quantitative approach, targeting decision-makers in Indonesian chemical companies. A total of 173 respondents were involved, with a participation rate of 87%, ensuring a comprehensive representation of industry practices. The data analysis employs SmartPLS software, suitable for exploratory research and complex models. The study's findings indicate that ethical leadership, organizational culture, and individual morality play vital roles in shaping an ethical environment and preventing fraud. Ethical leadership emerged as a key influencer in reducing fraudulent practices, while a strong organizational culture was found to be critical in deterring unethical behaviors. Individual morality, shaped by personal beliefs and values, was also significant in ethical decision-making. The study concludes that a synergy between these elements is essential for fostering integrity and accountability, crucial in maintaining public trust and adhering to safety standards. The research contributes both academic insights and practical guidance for stakeholders in the chemical industry, aiming to strengthen ethical foundations and combat fraud.

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1. Introduction

The global chemical industry, vital for a myriad of sectors from pharmaceuticals to agriculture, is underpinned by its commitment to innovation, safety, and ethical operations. Ethical leadership is crucial in this context, not only shaping the strategic and operational aspects but also influencing the ethical climate within these corporations. The pivotal nature of the chemical industry in global supply chains makes its ethical standing even more critical. However, challenges persist. Just as high-ranking government officials have been implicated in fraud cases in some sectors, the chemical industry is not immune to similar ethical breaches.

Beyond the immediate financial repercussions of such fraudulent activities, the ramifications for the chemical industry can be manifold. The very essence of the industry revolves around trust in product quality, safety standards, and environmental responsibility. Breaches can lead to significant environmental, health, and safety hazards, tarnishing the reputation of companies, impacting public trust, and often culminating in stringent regulatory actions.

Yet, leadership alone doesn't shoulder the responsibility of ethical conduct. The broader organizational framework, including its codes of ethics and internal control systems, is instrumental in shaping the ethical behavior of the entire institution. Numerous studies have highlighted the consequences of breaches in these ethical codes, ranging from environmental mishaps to misrepresentation of product compositions (Rahim et al., 2017; Zakaria et al., 2016). These codes, while outlining the moral and operational boundaries, rely heavily on rigorous internal control systems to ensure compliance. In many chemical companies, weaknesses in such systems have paved the way for malpractices, inadvertently risking not only financial assets but also public safety.

However, beyond these systems and structures lies the undeniable influence of individual actors within the organization. Their morality, shaped by personal beliefs, experiences, and values, plays a pivotal role in decision-making processes. The ethical dilemmas faced by individuals in the chemical industry, whether it's about discharging waste or reporting accurate results of a product test, can often test their moral fiber.

In this paper, we explore the intricate dynamics of ethical leadership, organizational culture, and individual morality within the chemical industry.

Drawing from a wealth of scholarly work (Lestari and Tarjo, 2017; Kartadjumena & Indriyati, 2021; Cahyani, et al, 2022), this investigation aims to discern the strategies and mechanisms by which these entities converge to enhance ethical practices. By unraveling these dynamics, our objective is to offer both academic insights and practical guidance for chemical industry stakeholders aiming to fortify their ethical foundations.

2. Literature Review Ethical Leadership in Chemical Companies

Ethical leadership in the chemical industry is a critical factor in shaping an organization's ethical climate and its stance against fraudulent practices. Building upon previous studies (Hikmah & Marastuti, 2019; Suh & Shim, 2020), this review explores the dimensions of ethical leadership, including the integrity, fairness, and care exhibited by leaders. These characteristics are not only embodied personally but also communicated and reinforced through the organizational culture. Ethical leaders serve as role models, fostering an environment of trust and ethical behavior within the organization.

Organizational Culture and Its Role in Fraud Prevention

The organizational culture within chemical companies plays a pivotal role in fraud prevention. Studies like those of Lestari & Tarjo (2017) and Kumar, Bhattacharya, & Hicks (2018) show how a strong, positive organizational culture can act as a deterrent against unethical behaviors. This culture, often nurtured by ethical leadership, emphasizes values like integrity, accountability, and transparency. A robust organizational culture provides a framework within which employees operate, making it a critical element in preventing fraudulent activities.

Professional Ethics in the Chemical Industry

Professional ethics in the chemical industry, as highlighted by Sagala (2018) and Awang, Rahman, & Ismail (2019), are fundamental to ensuring that all operations adhere to ethical and legal standards. These standards are not just about complying with regulations but also about maintaining the trust of stakeholders, including customers and the wider public. Professional ethics encompass the moral principles that guide the behavior of individuals within the organization, particularly in situations involving moral dilemmas.

Internal Control Systems

The role of internal control systems in combating fraud in the chemical industry is well-documented (Wonar, Falah, & Pangayow, 2018; Dwiyanti, 2022). These systems are integral in ensuring adherence to ethical guidelines and detecting irregularities. Effective internal controls not only protect financial assets but also safeguard the organization's reputation and ensure the safety and quality of its products.

Individual Morality and Decision Making

Individual morality plays a crucial role in decision-making processes within the chemical industry. The ethical dilemmas faced by employees, from waste disposal to the accuracy of product testing, test their moral fiber. Studies like those by Lestari and Tarjo (2017) and Kartadjudena & Indriyati (2021) highlight the importance of individual moral reasoning in ethical decision-making.

This literature review underscores the complex interplay between ethical leadership, organizational culture, professional ethics, internal control systems, and individual morality. Each component plays a vital role in creating an ethical environment in the chemical industry, crucial for preventing fraud and maintaining public trust. The synergy between these elements is key to fostering a culture of integrity and accountability, essential in today's business landscape.

3. Methodology Research Design and Participants

This study employs a quantitative research design, focusing on Board of Directors (BOD) and one level below Board of Directors (BOD-1) of chemical companies in Indonesia. The participants are chosen using purposive sampling (Kuntadi et al., 2023; Saunders et al., 2009), targeting individuals who hold decision-making authority and have insight into the ethical practices and fraud prevention measures within their organizations (Fahlevi, Vional, et al., 2022; Meiryani et al., 2023). The sample size for this study is determined using G*Power software, a tool for statistical power analysis (Sekaran & Bougie, 2016). This approach ensures that the sample size is adequate to detect the effects of interest reliably. The analysis considers the number of predictors, desired power level (typically 0.80 or higher), and the alpha level (commonly set at 0.05) (Gaskin, 2013). Based on this analysis, a total of 173 respondents from various chemical companies in

Indonesia are identified as the target sample. From the targeted respondents, a participation rate of 87% is achieved, indicating a high level of engagement and relevance of the subject matter to the participants. This high participation rate enhances the validity and reliability of the research findings, as it suggests a comprehensive representation of views and practices within the industry (Fahlevi et al., 2023).

Data Collection

Data collection is conducted through structured questionnaires distributed to the participants. The questionnaire items are designed to measure various constructs related to ethical leadership, organizational culture, internal control systems, professional ethics, and individual morality. For data analysis, this study employs the SmartPLS (Partial Least Squares Structural Equation Modeling) software. SmartPLS is chosen for its ability to handle complex models and its suitability for exploratory research where the primary goal is theory building (Hair Jr et al., 2017; Sahir et al., 2021). This tool is particularly adept at analyzing small to medium-sized samples and can handle non-normally distributed data, making it appropriate for this study. The use of SmartPLS is expected to provide valuable insights into how ethical leadership, organizational culture, professional ethics, internal control systems, and individual morality interact to prevent fraud in the Indonesian chemical industry. The findings are anticipated to offer practical recommendations for industry leaders and policymakers to strengthen ethical practices and fraud prevention measures.

Ethical Considerations

All participants are informed about the purpose of the study, and confidentiality is assured. Participation is voluntary, and respondents have the right to withdraw at any time without any consequences.

4. Result and Discussion

Outer Model Results

The outer model in PLS-SEM analysis primarily assesses the measurement model, focusing on the relationships between the latent variables and their observed indicators. Key metrics include outer loadings, Average Variance Extracted (AVE), and reliability measures. The discriminant validity is also evaluated. The following Table 1.

Table 1. Convergent Validity

Construct	Outer Loadings	Cronbach's Alpha	Composite Reliability	AVE
Ethical Leadership	0.71 - 0.89	0.88	0.91	0.67
Organizational Culture	0.73 - 0.87	0.85	0.90	0.65
Individual Morality	0.74 - 0.88	0.86	0.89	0.68
Fraud Prevention	0.79 - 0.90	0.90	0.93	0.72

The Table 1 reflects a detailed assessment of four key constructs in the chemical industry context: Ethical Leadership, Organizational Culture, Individual Morality, and Fraud Prevention. For each of these constructs, the outer loadings demonstrate a strong and positive relationship between observed indicators and the respective latent variables. Specifically, Ethical Leadership has loadings between 0.71 and 0.89, indicating that the indicators used to measure this construct are highly relevant. Similarly, Organizational Culture, Individual Morality, and Fraud Prevention show outer loadings within the ranges of 0.73 to 0.87, 0.74 to 0.88, and 0.79 to 0.90, respectively. These figures suggest that each construct is well-represented by its indicators.

The Cronbach's Alpha values for these constructs (Ethical Leadership at 0.88, Organizational Culture at 0.85, Individual Morality at 0.86, and Fraud Prevention at 0.90) exceed the 0.7 threshold, implying high internal consistency within each set of indicators. This means that the items used to measure each construct are reliably capturing the intended concept. The Composite Reliability scores (Ethical Leadership at 0.91, Organizational Culture at 0.90, Individual Morality at 0.89, and

Fraud Prevention at 0.93) further confirm the reliability of the constructs. These scores, all above the recommended value of 0.7, indicate that the constructs are measured with a high degree of consistency across various indicators.

The Average Variance Extracted (AVE) values for each construct (Ethical Leadership at 0.67, Organizational Culture at 0.65, Individual Morality at 0.68, and Fraud Prevention at 0.72) are above the 160 minimum acceptable level of 0.5. This suggests that a majority of the variance in the indicators is accounted for by their respective constructs, thereby providing evidence of the convergent validity of the measurement model. In summary, these results demonstrate a robust measurement model with strong reliability and validity for each of the constructs considered in the study.

Path Analysis

This provides a comprehensive overview of how the independent variables (Ethical Leadership, Organizational Culture, and Individual Morality) impact Fraud Prevention in the chemical industry

Table 2. Bootstrapping and R-Square

Independent Variables	Path Coefficient to Fraud Prevention	Significance	R-Square
Ethical Leadership	0.32	p < 0.01	
Organizational Culture	0.41	p < 0.01	0.61
Individual Morality	0.28	p < 0.05	

Note: β coefficients represent the strength of the relationships, and the p-values signify the significance levels.

This Table 2 allows for a detailed interpretation of the results and hypothesis testing: Ethical Leadership to Fraud Prevention ($\beta = 0.32, p < 0.01$). The positive path coefficient suggests that ethical leadership significantly influences fraud prevention in the chemical industry. The

significance level ($p < 0.01$) strongly supports this relationship. This result confirms the hypothesis that ethical leadership is a crucial factor in reducing fraudulent practices within organizations. Organizational Culture to Fraud Prevention ($\beta = 0.41, p < 0.01$). With the highest

path coefficient among the variables, organizational culture shows a substantial positive impact on fraud prevention. The p-value less than 0.01 indicates a high level of significance, underscoring the vital role organizational culture plays in deterring fraud. This finding validates the hypothesis that a robust and ethical organizational culture is essential for effective fraud prevention. Individual Morality to Fraud Prevention ($\beta = 0.28$, $p < 0.05$). This coefficient indicates a positive but somewhat lesser impact of individual morality on fraud prevention compared to the other factors. The significance level ($p < 0.05$) confirms this relationship, supporting the hypothesis that individual moral values and decisions significantly contribute to fraud prevention efforts within the chemical industry. The R-square value of 0.61 for Fraud Prevention indicates that 61% of the variance in fraud prevention within the chemical industry is explained by these three independent variables. This high R-square value reflects the strong combined influence of ethical leadership, organizational culture, and individual morality on fraud prevention.

Discussion

Organizational Culture's Influence on Fraud Prevention

The analysis highlights that a robust organizational culture positively impacts fraud prevention. This finding aligns with the understanding that fraud often arises from opportunities created by weak internal controls, lack of supervision, and misuse of authority. The development of an organizational culture typically starts from individual or group beliefs, values, and habits, which over time become embedded in the organization's practices (Al-Abdullat & Dababneh, 2018). In this context, when a culture that embraces innovation, risk management, attention to detail, results-orientation, and team collaboration is nurtured, it significantly enhances fraud prevention efforts. The study also suggests that organizational culture is not only shaped by internal values and aspirations but can also adopt positive local and national cultural aspects, which further reduces fraudulent behavior and strengthens the organizational culture positively (Emita et al., 2021).

Ethical Leadership's Impact on Fraud Prevention

Surprisingly, the analysis indicates that ethical leadership does not significantly influence fraud

prevention in the Indonesian chemical industry context. This suggests that the quality of fraud prevention is not solely dependent on ethical leadership (Afsar et al., 2020). Ethical leadership involves influencing or setting examples through normative behaviors in personal and interpersonal actions, rooted in the principles of right and wrong. However, the study findings imply that a leader's personal morals do not necessarily translate into effective fraud prevention, indicating a complex relationship between leadership ethics and organizational behavior (Fahlevi, Aljuaid, et al., 2022; Shah, Al-Ghazali, et al., 2023).

Role of Individual Morality in Fraud Prevention

The study indicates that individual morality plays a less significant role in fraud prevention compared to organizational culture and ethical leadership (Shah, Fahlevi, et al., 2023). This suggests that while individual morals are essential, they are not the sole determinants of fraudulent behavior in organizations. The collective values and practices within an organization, as well as the ethical standards set by its leadership, play more crucial roles in shaping an anti-fraud environment (Halbouni, 2015).

5. Conclusions

The research focusing on the interplay between ethical leadership, organizational culture, individual morality, and fraud prevention within Indonesia's chemical industry leads to significant conclusions and implications. Firstly, it's evident that organizational culture plays a crucial role in mitigating fraud. A robust culture that prioritizes innovation, detailed attention, teamwork, and ethical conduct substantially reduces fraudulent activities. The integration of positive local and national cultural aspects further solidifies this impact. Secondly, the study reveals that while ethical leadership is fundamental in setting moral guidelines and influencing organizational behavior, its direct impact on fraud prevention is somewhat limited, suggesting the need for a broader approach encompassing various organizational factors. These findings emphasize the need for companies in the chemical sector to develop and maintain strong, ethical organizational cultures as a cornerstone of fraud prevention. Leadership development programs should extend beyond imparting ethical values to embedding these principles within the broader organizational context. Policies should encourage the cultivation of ethical practices and internal controls, with regulatory frameworks supporting this direction.

Additionally, consistent employee engagement and education are vital to align individual moral values with organizational ethics. The research also underscores the necessity for ongoing studies to understand the intricate relationship between these elements in different industrial and geographical contexts, aiding in the formulation of more targeted anti-fraud strategies. Finally, a comprehensive approach in policy implementation and regular monitoring and evaluation of the effectiveness of organizational culture, ethical leadership, and individual morality in fraud deterrence are essential for sustained success.

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