

Bridging Ethics, Digital Transformation, and Control Systems: The Role of Ethical Climate in SME Fraud Prevention

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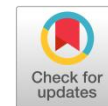
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Abstract

This study examines the mediating role of ethical climate in the relationship between ethical orientation, digital transformation, management control systems (MCS), and fraud prevention in small and medium-sized enterprises (SMEs). This study employs an explanatory quantitative design with primary data collected from SME owners and managers in the Special Region of Yogyakarta through purposive sampling. Data analysis used Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The results indicate that idealism, digital transformation, and MCS significantly influence the ethical climate, which in turn strengthens fraud prevention. An ethical climate fully mediated the effect of digital transformation and partially mediated the effects of idealism and SPM, while it did not mediate the effect of relativism. These findings indicate that the effectiveness of fraud prevention in SMEs depends not only on formal control systems and the adoption of digital technology but also on internalizing ethical values within the organizational climate. This study contributes by affirming the central role of ethical climate as a mediating mechanism linking individual ethics and organizational governance in mitigating fraud risk.



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Introduction

SMEs are a backbone of the national economy, contributing more than 60% of the gross domestic product (GDP) and employing approximately 97% of the workforce in Indonesia (Kementerian Koordinator Bidang Perekonomian Republik Indonesia, 2025). Despite their strategic role, SMEs remain vulnerable to fraud due to limited resources, fewer anti-fraud measures, and weaknesses in internal control and monitoring (Azizan & Ali, 2024; N'Guilla et al., 2018; Zainal et al., 2021). These limitations may increase SMEs' exposure to fraudulent activities and reduce the effectiveness of fraud prevention and monitoring. For SMEs, fraud is not merely a financial loss; it can disrupt business continuity, damage stakeholder trust, harm organizational reputation, and weaken accountability in daily business operations. Therefore, fraud prevention (FP) is an important organizational capability that enables SMEs to maintain integrity, continuity, and responsible business practices.

Evidence from Indonesia confirms that fraud can occur in MSME operations. A qualitative case study of Mazaya, an MSME in Malang, documented employee cash theft and the use of business funds for personal purposes, with reported losses from employee fraud ranging from IDR 200,000 to IDR 3,000,000 (Mustofiyah et al., 2022). International evidence further illustrates the potential financial consequences of occupational fraud in smaller organizations. ACFE (2024) reports a median loss of US\$141,000 among investigated occupational fraud cases involving organizations with fewer than 100 employees. These figures provide documented evidence of fraud occurrence and its potential financial consequences. However, they

should not be interpreted as estimates of fraud prevalence among Indonesian MSMEs, and ACFE's employee-based organizational size category does not align with the Indonesian MSME classification.

Based on the occupational fraud framework developed by the Association of Certified Fraud Examiners (ACFE, 2024), this study defines fraud as occupational fraud committed by organizational members against the organizations in which they work. ACFE classifies occupational fraud into three broad categories: asset misappropriation, corruption, and financial statement fraud. This study focuses on fraud risks in the day-to-day operations of SMEs, particularly asset misappropriation and corruption, which may involve misuse of cash, inventory, or other business assets; unauthorized transactions; conflicts of interest; bribery; kickbacks; and collusion (ACFE, 2024). However, these fraud categories define the study's substantive context rather than serving as separately measured outcomes. Fraud prevention (FP) is operationalized as reported organizational practices designed to reduce fraud risks through ethical leadership, code-of-conduct implementation, a positive workplace environment, fraud awareness training, fraud risk assessment, internal control systems, reporting mechanisms, and oversight practices (N'Guilla et al., 2018). Accordingly, FP reflects the organizational practices used to prevent and respond to fraud risks rather than the actual incidence, financial magnitude, or observed reduction of fraud. The study therefore does not examine financial statement fraud as a separate outcome because it does not use specific indicators of accounting manipulation or archival measures of financial misstatement.

The study examines ethical orientation through SME owners' or managers' idealism and relativism. Ethics Position Theory distinguishes idealism, which concerns avoiding harm and protecting others' welfare, from relativism, which concerns skepticism toward universally applicable moral rules and context-dependent moral judgment (Forsyth, 1980; O'Boyle & Forsyth, 2021). These are distinct dimensions rather than opposite ends of a single ethical continuum. Accordingly, the study treats idealism and relativism as separate independent variables describing the respondent's personal moral orientation, not as interchangeable measures of organizational ethics. Their relevance lies in how decision-makers' moral priorities may be reflected in the organizational environment.

Theoretically, this study is primarily grounded in Ethical Climate Theory because ethical climate (EC) serves as the central mediating mechanism in the research model. Ethical Climate Theory explains that shared perceptions of ethical standards shape organizational members' behavior and guide how organizations address ethical issues (Victor & Cullen, 1988). Ethical climate is particularly relevant for explaining FP because it provides shared norms that help organizational members recognize ethical risks, evaluate acceptable conduct, and reduce tolerance for fraudulent behavior (Martin & Cullen, 2006; Newman et al., 2017). In SMEs, which commonly have relatively simple formal structures and control mechanisms, EC serves as a value-based control mechanism that transforms individual ethical values, management control practices, and digital transformation into fraud-preventive behavior.

For idealism, the proposed pathway begins with the owner's or manager's concern about harm to others. This concern may be expressed in decisions, communication, and responses to misconduct that prioritize stakeholder welfare. Leadership-climate research supports the relevance of managerial conduct to perceptions of organizational ethical expectations (Shin, 2012). Building on this reasoning, idealistic orientations may be associated with a more caring organizational environment, in which protecting people and shared resources provides a rationale for prevention practices. EC is therefore expected to mediate the relationship between idealism and FP by translating individuals' concern for others into organizational priorities that foster fraud-prevention practices.

Relativism offers a different explanation because contextual moral judgment does not itself imply disregard for others or acceptance of dishonesty (O'Boyle & Forsyth, 2021). Its proposed relevance concerns how owners or managers decide which moral considerations should guide action across different business situations. Moral judgments associated with relativism may encourage responsiveness to legitimate stakeholder needs, while also making the priority given to collective welfare more dependent on specific circumstances. Accordingly, this study examines whether relativism is associated with FP through a caring-oriented organizational climate as perceived by SME owners or managers. This proposed pathway focuses

on how managerial moral reasoning may be reflected in the organizational environment, rather than assuming that relativism necessarily leads to fraudulent behavior.

Digital transformation (DT) concerns the SME's digitalization efforts, use of data, integration of business processes, digital customer services, and information sharing. Digitalization research identifies opportunities to improve customer understanding and team communication while also raising questions about its ethical implications (Nazaruddin et al., 2024). Recent evidence from Indonesian SMEs further indicates that simple accounting technology can contribute positively to organizational accountability and sustainability, highlighting the broader organizational relevance of technology adoption in SME contexts (Hamzah & Rahmawati, 2025). Extending these insights, integrated information and digitally supported customer interactions may help decision-makers recognize stakeholder needs and the consequences of business decisions for others. The proposed indirect pathway is that these practices support a caring-oriented organizational environment, which may subsequently support FP. This argument does not equate digital adoption with ethical conduct or treat DT as a measure of cybersecurity or fraud-detection technology.

MCS provides a further organizational antecedent. An ethically oriented MCS can function not only as a formal control mechanism, but also as part of an organization's ethical infrastructure that communicates ethical values, clarifies acceptable conduct, and motivates organizational members to act consistently with those values (Bellora-Bienengraber et al., 2022). The present study, however, assesses general MCS functionality: support for efficiency, strategic adaptation, coordination, goal alignment, and decision-relevant information, rather than explicit ethical content. It proposes that coordination and relevant information can facilitate consideration of colleagues' interests and the consequences of decisions, thereby supporting a caring-oriented EC. This potential pathway is distinct from presuming that any functioning control system is inherently ethical.

Because many SMEs operate with relatively simple structures and limited formalized procedures, FP cannot rely solely on written rules or technical controls. A caring-oriented EC offers a complementary explanation: prevention practices may be supported because they protect people and collective interests, not only because rules require them. Concern for stakeholder welfare can justify fraud-awareness training, risk assessment, internal controls, and reporting. EC and FP nevertheless remain conceptually distinct: EC concerns perceived ethical priorities in the organization, whereas FP concerns the practices implemented to address fraud risks. Ethics Position Theory explains the personal antecedents, while Ethical Climate Theory explains the proposed link between ethics and prevention practices.

Prior studies provide complementary insights into SME fraud controls (Azizan & Ali, 2024; N'Guilla et al., 2018) and the ethical implications of management controls (Bellora-Bienengraber et al., 2022). These strands motivate a more specific question: how might a caring-oriented EC connect managerial ethical orientations and organizational arrangements with FP? This study contributes by positioning EC as a theoretically specified mediating mechanism that connects individual ethical orientation, DT, and MCS with FP in a single SME fraud prevention model. Specifically, it distinguishes the proposed indirect roles of idealism and relativism and separates personal moral concern, perceived organizational caring, and reported prevention practices. This extends the argument beyond merely combining predictors in one model.

The Special Region of Yogyakarta (DIY) was selected as the empirical setting because its SME characteristics align with the research gap. Regional initiatives, including Sibakul Jogja, support enterprise digitalization and provide a relevant setting for examining the organizational implications of digital change (Fridayani & Chiang, 2022). Therefore, DIY provides a relevant empirical setting for examining how ethical orientation, DT, and MCS are linked to FP through EC in SMEs. The regional context motivates the study setting, not a claim that the sample represents all Indonesian SMEs.

Accordingly, this study examines EC's mediating role in the relationships among ethical orientation, DT, MCS, and FP in SMEs. The study retains direct relationships between each antecedent and FP alongside indirect relationships through EC; EC is proposed as an important pathway, not the exclusive mechanism. With one owner or manager reporting for each SME, the analysis examines associations among personal ethical orientations and managerial assessments of organizational conditions and prevention practices, rather

than demonstrating causal transmission or employee consensus. Practically, the study shows how concern for stakeholder welfare can be linked to digital and control practices in developing fraud-prevention arrangements in SMEs.

Literature Review

This study is primarily grounded in Ethical Climate Theory because ethical climate (EC) serves as the central mediating mechanism in the research model. Ethical Climate Theory asserts that shared perceptions of ethical standards shape organizational members' behavior and serve as a social mechanism that transforms individual values into organizational practices (Victor & Cullen, 1988). In this study, EC is positioned as a value-based organizational mechanism that links individual ethical orientation, DT, MCS, and FP. This theoretical position aligns with recent ethical climate research, which shows that EC can function not only as an outcome of organizational practices but also as a mechanism that shapes ethical and behavioral outcomes (Newman et al., 2017). Empirical studies also show that a strong EC contributes to increased accountability and ethical decision-making, especially in increasingly digitalized environments (Bian et al., 2025; Setyaningsih & Nengzih, 2020).

Ethical Position Theory explains that individual ethical idealism and relativism influence moral judgments and ethical behavioral tendencies, including ethical decision-making under specific circumstances (Forsyth, 1980; Nazaruddin, 2012; Verwey & Asare, 2022). Ethical Position Theory supports explanations of the individual-level antecedents of EC, namely idealism and relativism. However, in an organizational setting, individual ethical orientation does not operate in isolation. Individual moral values need to be translated into shared ethical norms before they can guide collective behavior and fraud-preventive practices. Thus, Ethical Position Theory explains the model's individual ethical foundation, while Ethical Climate Theory explains how individual values become organizationally meaningful.

Following Victor and Cullen (1988), Ethical Climate Theory consists of two main dimensions. The first dimension is the locus, or source, of moral reasoning, which includes individual, local, and cosmopolitan (external) sources. The individual source refers to personal moral beliefs, represented in this study by idealism and relativism. The local source refers to ethical reasoning shaped by internal organizational norms, managerial practices, rules, and control systems within SMEs. The cosmopolitan or external source refers to ethical reasoning guided by external standards, professional norms, regulatory expectations, and broader accountability mechanisms. The second dimension is the ethical criterion, which consists of egoism, benevolence, and principle. Egoism reflects self-interest and opportunistic behavior, benevolence reflects concern for others' welfare, and principle reflects adherence to rules, codes of ethics, internal controls, and formal standards. In this study, EC is expected to support fraud prevention when it is more oriented toward benevolence and principle rather than egoism. Thus, idealism and relativism are not treated as dimensions of EC, but as individual-level ethical orientations that may shape EC formation.

This study explains MCS and DT through an organizational governance and control perspective. This study explains MCS through an organizational governance and control perspective. In this study, MCS refers to organizational control practices that support efficiency, strategic adaptation, coordination, goal alignment, and decision-relevant information. Recent accounting research shows that ethically focused MCS can become part of an organization's ethical infrastructure by communicating ethical values, clarifying acceptable conduct, and motivating organizational members to act consistently with those values (Bellora-Bienengräber et al., 2022). Similarly, informal controls and organizational values shape ethical work climates because formal rules alone may not guide ethical conduct in ambiguous situations (Goebel & Weißenberger, 2017). Building on this reasoning, MCS may contribute to EC development through improved coordination, clearer organizational expectations, and information sharing (Haron et al., 2024; Williams & Seaman, 2014). EC, in turn, may support FP, thereby serving as a mediating mechanism between MCS and FP (Gorsira et al., 2018; Sugianingrat et al., 2020).

DT is also understood as an organizational mechanism that can support transparency, transaction traceability, information reliability, and control discipline. However, digitalization does not automatically

prevent fraud. Digital systems may create new ethical risks when they lack ethical awareness, responsible data use, and clear organizational norms. Recent research on digital transformation shows that digital competence and digital systems should not be treated merely as technical resources because digital work environments also require ethical judgment, value alignment, and responsible decision-making (Bian et al., 2025). Thus, DT may support FP more effectively when it is embedded in a strong EC that guides the responsible use of digital systems.

Accordingly, EC serves as the key mechanism linking individual ethical orientation, MCS, and DT with fraud prevention. This study's theoretical framework positions Ethical Climate Theory as the main foundation, while Ethical Position Theory supports explanations of individual ethical orientation. MCS and DT are positioned as organizational mechanisms that may strengthen FP when they are embedded in a shared ethical climate. This approach addresses the limitations of previous studies, which tend to examine individual, technological, and organizational determinants of fraud prevention separately (Azizan & Ali, 2024; Pizzi et al., 2021).

Idealism Orientation and Fraud Prevention through Ethical Climate

Individual ethical orientation, especially idealism, plays an important role in shaping ethical behavior within organizations, including efforts to prevent fraud. Ethical Position Theory provides the primary theoretical foundation for explaining the relationship between idealism and ethical behavior. Idealism reflects an ethical orientation that emphasizes moral consistency, concern for others, and avoiding actions that may cause harm (Forsyth, 1980; Nazaruddin, 2012; Verwey & Asare, 2022). Individuals with stronger idealistic orientations tend to be more sensitive to the potential harm their decisions may impose on others and, consequently, are more likely to evaluate ethically questionable conduct critically (O'Boyle & Forsyth, 2021; Zaikauskaitė et al., 2020). In organizational settings, these personal values may extend beyond individual decision-making by shaping the norms and ethical climate that guide members' behavior (Arieli et al., 2020; Marinova et al., 2019; Yip et al., 2020).

In line with Ethical Climate Theory, individuals can internalize ethical values into EC as a social mechanism for guiding organizational behavior. A strong EC establishes shared standards regarding acceptable and unacceptable conduct, thereby reducing opportunities and justifications for fraud (Martin & Cullen, 2006; Victor & Cullen, 1988). Studies support this argument by showing that EC shapes ethical decision-making and may mediate the relationship between ethical antecedents and ethical behavior (Bian et al., 2025; Mehra & Narwal, 2025; Newman et al., 2017). In SMEs, where formal control mechanisms are often limited, EC becomes particularly important as a value-based control mechanism.

Thus, Ethical Position Theory explains why idealistic individuals are more likely to reject fraudulent behavior, whereas Ethical Climate Theory explains how these individual ethical values become shared organizational norms. In other words, idealism is an individual-level antecedent, while EC is the organizational mechanism through which idealism contributes to FP. Accordingly, this study argues that idealism strengthens FP when individual moral values are embedded in a shared ethical climate that promotes integrity, responsibility, and intolerance toward fraudulent practices.

H1. Ethical climate mediates the positive relationship between idealism and fraud prevention.

Relativism and Fraud Prevention through Ethical Climate

Relativism reflects an individual's tendency to reject universal moral principles and judge right and wrong based on situational conditions (Forsyth, 1980). In this study, relativism refers to the personal ethical orientation of SME owners or managers, characterized by greater reliance on situational considerations when evaluating ethical issues. Previous research supports its relevance to fraud-related judgments. Relativism is positively associated with fraud rationalization, indicating that individuals with stronger relativistic orientations are more likely to justify fraudulent actions (Obloh & Sproat, 2024). Similarly, relativism has been reported to be negatively related to ethical sensitivity, suggesting that higher relativism may reduce individuals' ability to recognize ethical issues (Johari et al., 2021).

Relativism is grounded in Ethical Position Theory rather than Ethical Climate Theory. Therefore, this study does not treat relativism as a direct component or proxy of EC. Instead, relativism is positioned as an individual-level antecedent that may influence how ethical priorities are reflected in the organizational environment. In this study, EC is conceptualized as a caring-oriented ethical climate that emphasizes concern for organizational members, stakeholders, and collective welfare, rather than a principle-oriented climate based primarily on formal rules and universal standards.

According to Ethical Climate Theory, EC reflects organizational members' shared perceptions of the standards of behavior considered correct, appropriate, and acceptable within the organization. A strong EC provides moral guidance for organizational members when facing ethical dilemmas and can reduce the tendency to engage in deviant behavior (Martin & Cullen, 2006; Victor & Cullen, 1988). Empirical research also demonstrates the relevance of ethical climate to fraud-related behavior. An instrumental ethical climate is associated with specific motives and rationalizations in fraud cases, suggesting that organizational ethical conditions shape how fraudulent conduct is justified (Murphy et al., 2012). Similarly, organizational ethical climate has been shown to have a significant negative effect on fraud behavior, supporting its role in reducing unethical conduct (Sugianingrat et al., 2020).

This situation is particularly relevant in SMEs, where limitations in formal systems and control mechanisms make organizations rely more heavily on value-based controls. When owners or managers rely more on relativistic judgments, the priority given to stakeholder welfare and collective interests may depend more on specific circumstances. If such judgments repeatedly shape managerial decisions and responses to ethical issues, the organization may place less emphasis on caring and collective welfare. A weaker caring-oriented EC may, in turn, reduce organizational support for fraud-prevention practices such as fraud-risk assessment, internal controls, prevention training, and employee reporting. Therefore, this study argues that relativism may weaken FP indirectly through its relationship with a caring-oriented EC. Accordingly, EC is positioned as the organizational mechanism linking the personal ethical orientation of SME owners or managers with fraud-prevention practices.

H2. Ethical climate mediates the negative relationship between relativism and fraud prevention.

Digital Transformation and Fraud Prevention through Ethical Climate

DT is a strategic process that leverages digital technology to improve operational efficiency, information transparency, and the quality of organizational decision-making. From an organizational governance and control perspective, digitalization can strengthen monitoring mechanisms, improve transaction traceability, and enhance accountability.

Digitalization has changed how organizations document transactions, monitor activities, and detect irregularities. Digital technology enables organizations to develop more effective oversight systems through digital records, audit trails, data integration, and continuous monitoring. IT-based auditing, risk management, and internal control systems may contribute to fraud prevention by improving data availability, auditability, and control visibility (Astuti et al., 2024; Pizzi et al., 2021; Shang et al., 2025; Wang & Han, 2024). However, technology alone does not automatically ensure ethical conduct or effective FP.

According to Ethical Climate Theory, shared perceptions of integrity, accountability, and compliance within an organization influence ethical behavior (Martin & Cullen, 2006; Victor & Cullen, 1988). DT can strengthen EC through increased transparency, digital audit trails, and more objective oversight. However, DT's ethical value depends on whether organizational members use digital systems responsibly and interpret digital information within shared ethical norms. Recent digital ethics research emphasizes that digital competence and digital systems are ethically relevant because they shape how individuals respond to ethical dilemmas in technology-mediated work environments (Bian et al., 2025).

In SMEs, DT can help establish more transparent and structured oversight systems even with limited resources. However, digitalization may also create new fraud opportunities if it is not accompanied by ethical awareness, responsible data use, and control discipline. Thus, DT is expected to strengthen FP through EC because EC provides the ethical guidance needed to ensure digital systems support transparency and

accountability rather than misconduct.

H3. Ethical climate mediates the positive relationship between digital transformation and fraud prevention.

Management Control Systems and Fraud Prevention through Ethical Climate

MCS is a set of formal and informal mechanisms designed to align individual behavior with organizational goals. In this study, MCS refers to formal and informal mechanisms that monitor and control organizational activities, including control procedures, performance monitoring, reporting, feedback, and operational oversight. From a modern perspective, MCS serves not only as an administrative tool but also as a normative instrument that can foster ethical behavior within organizations. An MCS that communicates ethical values can become part of an organization's formal ethical infrastructure and may reduce undesirable behavior by encouraging members to act consistently with ethical standards (Bellora-Bienengraber et al., 2022).

Previous research shows that internal control mechanisms contribute to FP in SMEs (Azizan & Ali, 2024). However, prior research has focused primarily on structural control aspects and has not fully explained EC's role as a mediating mechanism. This limitation is important because control systems may be less effective when they are not supported by shared ethical norms. Research on ethical work climates shows that organizational controls and values can shape ethical awareness and ethical conduct, while formal compliance mechanisms alone may be insufficient in ambiguous ethical situations (Goebel & Weißenberger, 2017; Newman et al., 2017).

Within the framework of Ethical Climate Theory, MCS contributes to the formation of EC through clear rules, consistent policy enforcement, managerial leadership, accountability practices, and ethical communication. Strong control systems can foster a positive EC, which ultimately reduces the risk of fraud (Bellora-Bienengraber et al., 2022; Utami & Barokah, 2024). In SMEs, even a simple but consistently applied MCS, when supported by a strong EC, can serve as an effective value-based control mechanism for FP.

H4. Ethical climate mediates the positive relationship between MCS and fraud prevention.

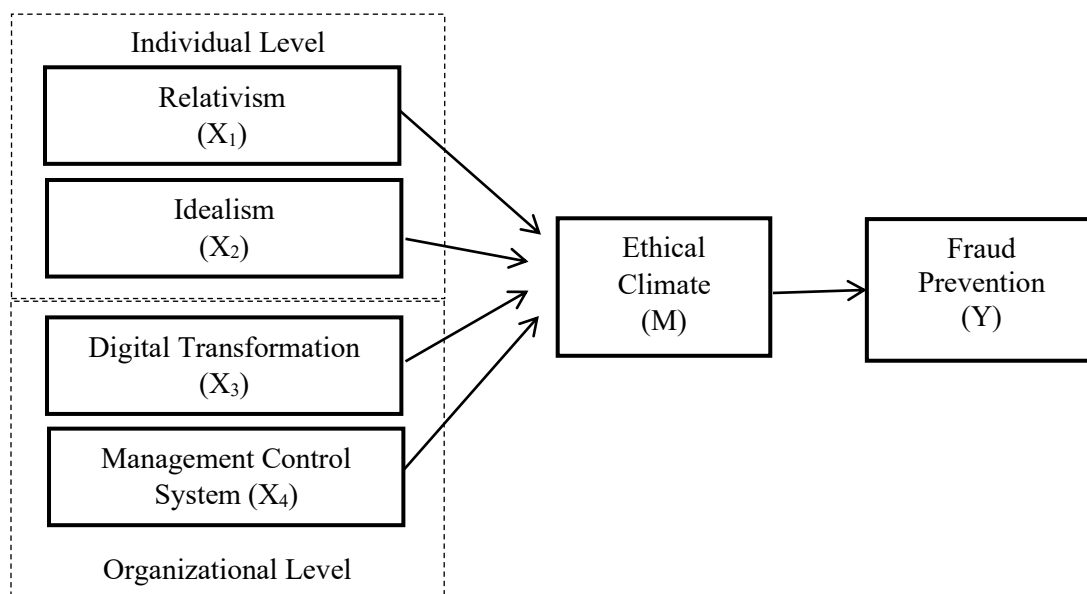


Figure.1 Research Model

Research Method

This study uses a quantitative, causal design to examine the relationship between ethical orientation, DT, MCS, and FP, with EC as the mediating variable. The research model positions EC as the mechanism linking individual ethical orientation and organizational mechanisms to fraud prevention in SMEs. This positioning is consistent with the theoretical framework developed in the previous sections, in which Ethical Climate

Theory serves as the main foundation. At the same time, Ethical Position Theory explains individual ethical orientations.

Data were collected through a survey of 180 SME owners or managers in the Special Region of Yogyakarta, Indonesia, using purposive sampling. Respondents were selected based on the following criteria: (1) the SME had been in operation for at least one year, (2) the respondent was involved in managerial decision-making, and (3) the SME had implemented financial record-keeping or digital technology in its business operations. In this study, SMEs were classified based on annual turnover in accordance with the Indonesian SME regulatory context. To ensure the research model's relevance, the sample was limited to SMEs with operational activities involving employees, workers, or non-owner members. Owner-only businesses were excluded because the constructs of ethical climate, management control systems, and fraud prevention require an organizational setting involving task delegation, monitoring, shared ethical norms, and internal control practices.

Data were obtained using a structured questionnaire adapted from a previously validated research instrument. The research instrument measured ethical orientation (idealism and relativism), DT, MCS, EC, and FP using a Likert scale. A pilot test ensured the instrument's clarity and reliability. Table 1 presents the operationalization of variables.

Table 1. Operationalization of Variables

Variable	Operational Definition	Main Indicators	Sources
DT	The adoption of digital technologies to support SME operations and decision-making	Use of digital technology; system integration; decision-making support; process automation; operational efficiency.	(García et al., 2022; Nugraha et al., 2022)
EC	Shared perceptions of ethical values and standards guiding organizational behavior.	Ethical standards; integrity; compliance; organizational norms; ethical responsibility.	(Martin & Cullen, 2006; Setyaningsih & Nengzih, 2020; Victor & Cullen, 1988)
FP	Organizational efforts to prevent and detect fraud.	Internal l controls; financial oversight; transparency; risk mitigation; corrective actions.	(N'Guilla et al., 2018; Pizzi et al., 2021; Rodgers et al., 2023)
Idealism	Ethical orientation emphasizing universal moral principles and avoidance of harm.	Moral values; compassion; moral consistency; ethical decision-making.	Forsyth (1980); Nazaruddin (2012); Verwey & Asare (2022)
Relativism	Ethical orientation based on situational moral judgments.	Ethical flexibility; contextual judgment; value tolerance; decision adjustment.	(Forsyth, 1980; Oboh et al., 2020; Sun & Chen, 2022)
MCS	Formal and informal mechanisms for monitoring and controlling organizational activities.	Control procedures; performance monitoring; reporting; feedback; operational oversight.	(Chenhall, 2003; García et al., 2022)

Note: DT = Digital Transformation; MCS = Management Control Systems; EC = Ethical Climate; FP = Fraud Prevention.

Because this study examines fraud prevention, several procedural and statistical measures were implemented to mitigate social desirability bias. First, the questionnaire did not ask respondents to admit personal involvement in fraudulent activities or to assess specific fraud incidents within their businesses. Instead, the questionnaire focused on organizational mechanisms for preventing fraud, including ethical leadership, a code of ethics, a positive ethical work environment, fraud prevention training, fraud risk assessment, internal controls, reporting mechanisms, and oversight by both internal and external parties.

This approach is consistent with the fraud prevention construct for SMEs proposed by N'Guilla et al. (2018), which emphasizes a culture of honesty, anti-fraud processes and controls, and monitoring functions. Accordingly, the instrument developed by N'Guilla et al. (2018) measures fraud prevention based on the extent to which these organizational mechanisms are implemented, rather than respondents' self-reported involvement in fraudulent behavior.

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. PLS-SEM was selected because it is suitable for prediction-oriented research, complex mediation models, and latent constructs measured by multiple indicators (Hair et al., 2021). The analysis evaluated the measurement model using convergent validity, reliability, and discriminant validity (HTMT), then assessed the structural model using bootstrapping to test path relationships and mediation effects.

Additional evaluations included multicollinearity (VIF), coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), out-of-sample predictive power (PLSpredict), and model fit indices (SRMR and NFI). To minimize common method bias (CMB), this study ensured respondent anonymity and randomized question order (Podsakoff et al., 2003). Harman's single-factor test confirmed that no dominant factor explained most of the variance, indicating that CMB was not a significant issue.

Results and Discussion

This study distributed 250 questionnaires directly to SME owners and managers, and 182 were returned (72.8% response rate). Two questionnaires were excluded because they were incomplete, resulting in a final sample of 180 usable responses. All 180 usable questionnaires were included in the subsequent descriptive, measurement-model, and structural-model analyses. Table 2 presents the demographic profile of the respondents.

Table 2. Respondent Demographic Profile

Characteristics	Frequency	Percentage (%)
Gender		
Male	108	60.0
Female	72	40.0
Age Group		
20 – 35 years	107	59.4
36 – 50 years	60	33.3
>50 years	13	7.2
Educational Level		
Elementary School	1	0.6
Junior High School	3	1.7
Senior High School	68	37.8
Diploma	12	6.7
Bachelor's Degree	89	49.4
Master-Doctoral Degree	7	3.9
Position in SME		
Owner	125	69.4
Manager	55	30.6
Working period in SME		
<1 year	10	5.6
1–5 years	72	40.0
5–10 years	66	36.7
>10 years	32	17.8
Reported use of digital technology		
Use of at least one listed digital technology/service	180	100

Source: Primary data processed (2026)

Most respondents were male (60.0%), and 59.4% were aged 20–35 years. In terms of educational background, the largest group held a bachelor's degree (49.4%), followed by senior high school graduates (37.8%). Rather than inferring managerial competence from age or educational attainment, the sampling criteria established respondent suitability: each respondent was an SME owner or manager involved in managerial decision-making. In the final sample, 125 respondents (69.4%) were SME owners and 55 (30.6%) were managers. Their organizational familiarity was also reflected in their working tenure, with 94.4% having worked in the SME for at least one year. Educational characteristics are therefore reported descriptively and are not treated as a direct measure of respondents' ability to understand the study constructs.

Digital technology use was also verified through the respondent-profile section of the questionnaire. All 180 SMEs (100%) reported using at least one listed digital technology or service in their business operations, including digital payments (ShopeePay, OVO, GoPay, QRIS, or DANA), WhatsApp Business, social media (Instagram, Facebook, or TikTok), inventory-recording applications, or other digital applications. This information confirms the presence of digital technology use in the sampled SMEs. It differs from the DT construct, which assesses the extent to which SMEs engage in digitalization, data use, process integration, digital customer service, and information sharing.

The common method bias test using Harman's single-factor test indicates that the first component has an eigenvalue of 17.011 and explains 41.5% of the total variance. Since this value is below the generally accepted threshold of 50%, no single factor dominates the variance in the data. Thus, common method bias is not considered a serious problem in this study (Fuller et al., 2016; Podsakoff et al., 2003). The VIF values in the measurement model ranged from 1.594 to 3.025, indicating that all indicators fall below the conservative threshold of 3.3. This suggests that no serious multicollinearity issues exist among the indicators. Accordingly, the indicators used in this study are appropriate for further analysis in both measurement and structural models. Accordingly, the indicators used in this study are appropriate for further analysis in both measurement and structural models. To further assess the measurement model quality, Table 3 presents the outer loadings, internal consistency reliability, and convergent validity results for each construct.

As shown in Table 3, all indicators have outer loading values above 0.70, ranging from 0.710 to 0.864. The reliability results in Table 3 indicate that Cronbach's alpha values range from 0.878 to 0.913, rho_A values from 0.879 to 0.914, and composite reliability values from 0.905 to 0.929, suggesting adequate internal consistency reliability. In addition, the AVE values reported in Table 3 range from 0.578 to 0.702, exceeding the recommended threshold of 0.50 and confirming convergent validity. Thus, the measurement model meets the required reliability and convergent validity criteria for further structural model analysis (Fornell & Larcker, 1981; Hair et al., 2019, 2021). Having established adequate reliability and convergent validity, the next step was to assess discriminant validity.

Table 3. Measurement Model Assessment

Construct	No. of Items	Outer Loading Range	CA	rho_A	CR	AVE
DT	5	0.818–0.864	0.894	0.895	0.922	0.702
EC	8	0.735–0.831	0.913	0.914	0.929	0.622
FP	8	0.716–0.830	0.909	0.912	0.926	0.612
Idealism	7	0.710–0.780	0.878	0.879	0.905	0.578
MCS	6	0.770–0.815	0.885	0.885	0.912	0.635
Relativism	7	0.740–0.846	0.893	0.902	0.915	0.608

Note: DT = Digital Transformation; EC = Ethical Climate; FP = Fraud Prevention; MCS = Management Control Systems; CA = Cronbach's alpha; rho_A = rho_A reliability; CR = composite reliability; AVE = average variance extracted.

Source: Primary data processed (2026)

Discriminant validity was evaluated using the HTMT because this approach is more sensitive to discriminant validity issues than the Fornell–Larcker criterion or cross-loadings. Table 4 shows that all HTMT values were below the recommended threshold of 0.90, with the highest value of 0.880 observed in the relationship between EC and Fraud Prevention. These findings indicate that each construct in the model demonstrates adequate empirical distinctiveness. Although several HTMT values approached 0.90, all remained within acceptable limits for conceptually related constructs. Therefore, the measurement model's discriminant validity is satisfactory (Hair et al., 2019, 2021; Henseler et al., 2015). After establishing the measurement model's adequacy, the structural model was assessed for explanatory power and effect sizes. Table 5 presents the R^2 values for the endogenous constructs and the f^2 values for the structural paths.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

Construct	DT	EC	FP	Idealisme	MCS	Relativism
DT	—					
EC	0.864	—				
FP	0.788	0.880	—			
Idealism	0.603	0.647	0.666	—		
MCS	0.792	0.839	0.868	0.647	—	
Relativism	0.378	0.386	0.315	0.629	0.386	—

Note: DT = Digital Transformation; MCS = Management Control Systems; EC = Ethical Climate; FP = Fraud Prevention.

Source: Primary data processed (2026)

Table 5. Explanatory Power of the Structural Model**Panel A. R-square Values**

Endogenous Construct	R-square	Adjusted R-square	Interpretation
EC	0.706	0.699	Strong
FP	0.735	0.728	Strong

Panel B. Effect Size (f^2 -square)

Path	f^2 -square	Effect Size Interpretation
DT → EC	0.341	Approaching large
DT → FP	0.013	Very small / non-substantial
EC → FP	0.180	Moderate
Idealism → EC	0.031	Small
Idealism → FP	0.050	Small
MCS → EC	0.191	Moderate
MCS → FP	0.168	Moderate
Relativism → EC	0.000	No effect
Relativism → FP	0.021	Small

Note: DT = Digital Transformation; MCS = Management Control Systems; EC = Ethical Climate; FP = Fraud Prevention; R^2 = R-square; f^2 = effect size. The interpretation of f^2 follows Cohen's criteria: 0.02 = small, 0.15 = moderate, and 0.35 = large.

Source: Primary data processed (2026)

Although the main research hypotheses focus on indirect effects through EC, direct relationships were also tested to provide a more comprehensive understanding of the relationship patterns among variables in the PLS-SEM model. Table 6 presents the hypotheses testing result. The results show that DT has a positive and significant effect on EC ($\beta = 0.461$; $t = 7.225$; $p < 0.001$). These findings indicate that the higher the level of digital technology adoption in SMEs, the stronger the EC that is established. Digitalization can enhance transparency, information traceability, and accountability in business processes, thereby supporting a more ethical organizational environment. However, DT does not have a significant direct effect on Fraud Prevention ($\beta = 0.097$; $t = 1.601$; $p = 0.055$). These results suggest that digital technology

alone cannot reduce fraud without adequate ethical and governance mechanisms.

Table 6. Hypotheses Testing

Association	Hypothesis	Coefficient	T-statistic	Conclusion
Panel 1. Direct effect				
Digital Transformation → Ethical Climate	NH	0.461**	7.225	Significant
Digital Transformation → Fraud Prevention	NH	0.097 (n.s.)	1.601	Insignificant
Ethical Climate → Fraud Prevention	NH	0.404**	4.619	Significant
Idealism → Ethical Climate	NH	0.133**	2.279	Significant
Idealism → Fraud Prevention	NH	0.165**	3.174	Significant
MCS → Ethical Climate	NH	0.354**	4.228	Significant
MCS → Fraud Prevention	NH	0.345**	4.333	Significant
Relativism → Ethical Climate	NH	0.000 (n.s.)	0.007	Insignificant
Relativism → Fraud Prevention	NH	-0.092*	1.706	Significant
Panel 2. Specific indirect effect				
Digital Transformation → Ethical Climate → Fraud Prevention	H3	0.186**	3.676	Full mediation
Idealism → Ethical Climate → Fraud Prevention	H1	0.054**	1.958	Partial mediation
MCS → Ethical Climate → Fraud Prevention	H4	0.143**	3.442	Partial mediation
Relativism → Ethical Climate → Fraud Prevention	H2	0.000 (n.s.)	0.007	No mediation

Note: DT = Digital Transformation; EC = Ethical Climate; FP = Fraud Prevention; MCS = Management Control Systems; n.s. = not significant; ** significant at $\alpha = 5\%$; * significant only under a directional one-tailed test. NH = not hypothesized as a direct effect.

Source: Primary data processed (2026)

Furthermore, EC has a positive and significant effect on Fraud Prevention ($\beta = 0.404$; $t = 4.619$; $p < 0.001$). These findings confirm that ethical norms, integrity, compliance, and ethical responsibility within an organization are important factors in minimizing the potential for fraud. Thus, EC can be understood as a normative mechanism that guides organizational members' behavior in alignment with fraud prevention principles.

From the perspective of individual ethical orientation, Idealism has a positive and significant effect on EC ($\beta = 0.133$; $t = 2.279$; $p = 0.011$) and Fraud Prevention ($\beta = 0.165$; $t = 3.174$; $p = 0.001$). These results indicate that individuals with a high level of idealism tend to uphold moral principles, reject actions that may harm others, and help develop a more ethical work environment. This moral orientation also directly strengthens fraud prevention practices within the organization.

At the organizational level, MCS has a positive and significant effect on EC ($\beta = 0.354$; $t = 4.228$; $p < 0.001$) and Fraud Prevention ($\beta = 0.345$; $t = 4.333$; $p < 0.001$). These findings indicate that control procedures, monitoring, evaluation, reporting systems, and feedback mechanisms function not only as formal control tools but also as instruments that shape ethical and accountable behavior within the organization.

Conversely, Relativism does not significantly affect EC ($\beta = 0.000$; $t = 0.007$; $p = 0.497$). These results suggest that a flexible, contextual moral orientation is not strong enough to shape collective ethical norms within the organization. However, Relativism negatively affects Fraud Prevention ($\beta = -0.092$; $t = 1.706$; $p = 0.044$). This finding indicates that the higher the tendency toward relativism, the weaker the orientation toward fraud prevention. Nevertheless, interpret these results cautiously, as their significance is more relevant when the study uses a one-tailed test consistent with the negatively directed hypothesis.

Table 6 presents the results of the indirect effect tests. The findings indicate that EC acts as a key mediating mechanism in explaining the relationships between DT, Idealism, and MCS and Fraud Prevention. First, DT has a positive and significant indirect effect on Fraud Prevention through EC ($\beta = 0.186$; $t = 3.676$; $p < 0.001$). Since the direct effect of DT on Fraud Prevention is not significant, while the indirect effect is significant, EC acts as a full mediator. This means that DT can strengthen fraud prevention only when digitalization fosters an EC that supports transparency and accountability.

Second, Idealism has a significant indirect effect on Fraud Prevention through EC ($\beta = 0.054$; $t = 1.958$; $p < 0.05$). Since Idealism also has a significant direct effect on Fraud Prevention, this relationship indicates partial mediation. Thus, Idealism strengthens fraud prevention through two pathways: directly through individual moral orientation and indirectly through the development of an organizational ethical climate.

Third, MCS also has a significant indirect effect on Fraud Prevention through EC ($\beta = 0.143$; $t = 3.442$; $p < 0.001$). Since the direct effect of MCS on Fraud Prevention is also significant, EC acts as a partial mediator. These findings indicate that MCS prevents fraud not only through formal control mechanisms but also by establishing organizational ethical norms.

Conversely, Relativism does not have a significant indirect effect on Fraud Prevention through EC ($\beta = 0.000$; $t = 0.007$; $p > 0.05$). Thus, EC does not mediate the relationship between Relativism and Fraud Prevention. This result occurs because Relativism does not significantly affect EC. Therefore, Relativism is better understood as an individual factor that may weaken fraud prevention directly rather than through the mechanism of EC.

Overall, the mediation analysis confirms that EC is a key mechanism in the fraud prevention model for SMEs. DT, Idealism, and MCS become more effective in strengthening fraud prevention when they foster an organizational environment that upholds integrity, compliance, transparency, and ethical responsibility. Beyond explanatory power and hypothesis testing, the model's predictive capability was further assessed using the PLSpredict procedure. Table 7 presents the Q^2 predict values and prediction errors of the PLS-SEM model in comparison with the linear model (LM) and indicator average (IA) benchmarks.

Table 7. PLS-SEM predict Results for Out-of-Sample Predictive Assessment

Indicator	Q^2 predict	PLS-SEM RMSE	LM RMSE	IA RMSE	PLS-SEM MAE	LM MAE	IA MAE
EC1	0.465	0.490	0.531	0.671	0.403	0.421	0.562
EC2	0.404	0.513	0.541	0.664	0.426	0.430	0.559
EC3	0.367	0.521	0.539	0.655	0.430	0.426	0.529
EC4	0.371	0.567	0.596	0.715	0.451	0.453	0.581
EC5	0.451	0.503	0.548	0.679	0.399	0.425	0.568
EC6	0.457	0.485	0.538	0.659	0.398	0.417	0.556
EC7	0.391	0.522	0.600	0.669	0.411	0.452	0.563
EC8	0.451	0.479	0.527	0.646	0.391	0.414	0.547
FP_HE1	0.443	0.523	0.566	0.701	0.392	0.430	0.529
FP_HE2	0.392	0.544	0.595	0.697	0.412	0.452	0.544
FP_HE3	0.307	0.544	0.594	0.654	0.442	0.470	0.562
FP_IC4	0.360	0.537	0.597	0.672	0.425	0.473	0.559
FP_IC5	0.464	0.490	0.508	0.670	0.396	0.387	0.560
FP_IC6	0.474	0.504	0.557	0.695	0.407	0.427	0.583
FP_OP7	0.316	0.583	0.655	0.705	0.459	0.507	0.586
FP_OP8	0.456	0.506	0.557	0.686	0.410	0.422	0.578

Note: FP_HE = Fraud Prevention: Building a culture of honesty and high ethics; FP_IC = Fraud Prevention: Implementing effective internal control system; FP_OP = Fraud Prevention: Developing appropriate oversight process; EC = Ethical Climate; Q^2 predict = predictive relevance; PLS-SEM = partial least squares structural equation modeling; RMSE = root mean squared error; MAE = mean absolute error; LM = linear model; IA = indicator average. Source: Primary data processed (2026)

As shown in Table 7, all indicators have Q^2_{predict} values greater than 0, indicating that the model possesses predictive relevance. Furthermore, the prediction error values (RMSE and MAE) for the PLS-SEM model are generally lower than those of the benchmark model (linear model/LM), suggesting strong predictive capability. Thus, the model not only demonstrates strong explanatory power but can also adequately predict out-of-sample data. Overall, these results indicate that the research model has strong explanatory and predictive power, making it suitable for explaining and predicting fraud prevention in the SME context.

Discussion

EC serves as the mediating mechanism linking idealism, relativism, DT, and MCS to fraud prevention in SMEs. This discussion is grounded in Ethical Climate Theory as the main theoretical foundation, with Ethical Position Theory explaining individual ethical orientation. The findings suggest that FP is shaped not only by technology and formal control systems but also by individual moral values and shared organizational ethical norms.

The model's explanatory power supports this interpretation. The model explains 70.6% of the variance in EC and 73.5% of the variance in FP, indicating strong explanatory power. In addition, the PLSpredict results show positive Q^2_{predict} values across the reported indicators, suggesting that the model has predictive relevance. These results indicate that the proposed framework is not only statistically supported but also meaningful for explaining fraud prevention mechanisms in SMEs.

In Indonesian SMEs, these findings are particularly relevant because many operate with relatively simple organizational structures, limited formalized procedures, and close daily interaction among owners, managers, and employees. The respondent profile also shows that most respondents were relatively young and educated, with 59.4% aged 20–35 years and 49.4% holding a bachelor's degree. This profile suggests that many respondents may be familiar with digital tools and managerial practices. However, the results show that technology and control mechanisms alone are insufficient without shared ethical norms.

EC has a positive and significant effect on FP, confirming its role in shaping ethical behavior based on integrity, accountability, and compliance. The coefficient of EC on FP is 0.404, with a moderate effect size of 0.180, indicating that EC is a central mechanism in the model. Consistent with Ethical Climate Theory, shared ethical standards guide organizational decision-making and members' responses to ethical issues (Martin & Cullen, 2006; Victor & Cullen, 1988). This finding also aligns with prior studies showing that ethical values, control discipline, and organizational integrity strengthen fraud prevention and accountability (Astuti et al., 2024; Otuya & Akporien, 2017; Setyaningsih & Nengzih, 2020). Within SMEs, EC serves as a value-based control mechanism that translates ethical standards into practical routines, such as honest financial reporting, transparent transaction documentation, internal control discipline, reporting irregularities, and corrective actions. Thus, EC complements formal systems and strengthens fraud prevention.

The Mediating Role of Ethical Climate in the Relationship Between Idealism and Fraud Prevention

The findings indicate that EC significantly mediates the relationship between idealism and FP. The direct effect of idealism on FP is also significant, while the indirect effect through EC is significant. This pattern indicates partial mediation, meaning that idealism strengthens FP both directly and indirectly through EC. These findings suggest that individuals with high levels of idealism not only reject unethical behavior personally but also help develop an organizational environment that upholds moral values.

Theoretically, these findings are consistent with Ethical Position Theory, which explains that idealism encourages individuals to uphold universal moral principles and avoid actions that may harm others (Forsyth, 1980). In this study, idealism represents an individual-level ethical orientation that directly discourages tolerance for fraud. At the same time, the findings are also consistent with Ethical Climate Theory, which emphasizes that collective organizational norms shape individual and collective behavior

(Victor & Cullen, 1988). Thus, idealism functions at two levels: first, as an individual moral orientation that supports fraud-preventive behavior, and second, as an antecedent that contributes to EC formation.

These findings are also consistent with previous studies showing that individual moral orientation contributes to ethical decision-making quality and organizational integrity (Nazaruddin, 2012; Verwey & Asare, 2022). However, this study extends that line of research by showing that idealism is not only relevant for individual ethical judgment but also for organizational fraud prevention through EC. In SMEs, especially in Indonesia, owners and managers often play an important role in shaping daily organizational practices. When they reflect idealistic values through transparent communication, fair treatment, consistent rules, and intolerance toward fraud, these values may become shared ethical norms that guide employees' behavior.

Therefore, EC mediation clarifies how individual ethical values become organizationally meaningful. Ethical Position Theory explains why idealistic individuals are more likely to reject fraud, while Ethical Climate Theory explains how these values become a shared ethical environment that strengthens FP.

The Mediating Role of Ethical Climate in the Relationship Between Relativism and Fraud Prevention

The findings indicate that relativism does not significantly affect EC, and the indirect effect of relativism on FP through EC is also not significant. However, relativism has a weak negative direct effect on FP. Thus, EC does not mediate the relationship between relativism and FP in the present sample. Nevertheless, the negative direct relationship suggests that relativism remains relevant as an individual ethical orientation associated with fraud-prevention practices, even though this relationship does not operate through EC.

These findings should be interpreted carefully in relation to Ethical Position Theory. Relativism reflects an individual's tendency to judge right and wrong based on specific contexts and situations rather than universal moral principles (Forsyth, 1980). The negative direct relationship between relativism and FP is consistent with the possibility that greater reliance on situational moral judgment may be associated with less consistent support for fraud-prevention practices. Such flexibility may create room for exceptions or justifications when individuals evaluate ethically questionable conduct. Previous research shows that relativism is positively associated with fraud rationalization and negatively associated with ethical sensitivity, indicating that relativistic orientation can influence how individuals evaluate and justify ethically questionable behavior (Johari et al., 2021; Oboh & Sproat, 2024). However, the relationship between relativism and ethical evaluation is not necessarily uniform across settings. Recent evidence from Indonesia reports a positive association between relativism and perceiving earnings management as unethical, suggesting that relativistic orientation does not necessarily translate into greater acceptance of ethically questionable practices (Suwadji et al., 2025).

However, the insignificant effect of relativism on EC indicates that, in this sample, SME owners' or managers' personal relativistic orientation was not significantly associated with their perception of a caring-oriented ethical climate. This finding does not invalidate Ethical Position Theory; rather, it suggests a boundary to its organizational-level explanatory role. Ethical Position Theory remains useful for explaining individual moral orientation. However, the present results do not support the proposition that relativism is reflected in the SME's perceived caring-oriented ethical climate. Because the retained indicators met the reliability and validity criteria reported in the measurement model, the nonsignificant mediation is not, by itself, interpreted as evidence that the data were inappropriate.

This finding also provides an important implication for Ethical Climate Theory. The results suggest that EC may not serve as an intervening mechanism for different individual ethical orientations in the same way. Translating personal moral orientations into organizational climate may depend on whether those orientations are consistently expressed through managerial decisions, communication, and organizational practices. In the present study, relativism did not show such an association with the perceived caring-oriented EC. This result should also be considered in light of the study design: EC was assessed through one owner or manager representing each SME, and the cross-sectional survey does not directly capture how

individual ethical orientations become embedded in organizational norms over time. Therefore, the absence of mediation is best interpreted as an empirical boundary of the proposed mechanism in this sample, rather than as evidence that relativism can never influence ethical climate.

The Mediating Role of Ethical Climate in the Relationship Between Digital Transformation and Fraud Prevention

The findings indicate that EC significantly mediates the relationship between DT and FP, while DT's direct effect on FP is not significant. DT has a strong positive effect on EC (coefficient = 0.461; effect size = 0.341), approaching a large effect. However, its direct effect on FP is not significant and has a very small effect size (0.013). The significant indirect effect of DT on FP through EC indicates full mediation or indirect-only mediation. This result suggests that DT enhances FP only when it operates through EC.

These findings indicate that technology does not automatically generate ethical behavior; rather, it must be integrated into the organization's value system. DT can enhance transparency, accuracy, documentation, and traceability, which may support the development of organizational ethical norms (Pizzi et al., 2021). However, these technical benefits do not automatically reduce fraud if organizational members do not use digital systems responsibly or if ethical awareness, accountability, and control discipline do not support digital records. Without support from ethical values, technology remains neutral and may potentially be misused (Rodgers et al., 2023; Wang & Han, 2024).

From the perspective of Ethical Climate Theory, EC provides the shared ethical norms that determine whether digital systems promote transparency and accountability or are treated merely as operational tools. When EC is strong, digital records, audit trails, access controls, and data verification are more likely to support FP. When EC is weak, digital systems may remain procedural or may even create opportunities for data manipulation, unauthorized access, or misuse of information. This interpretation is consistent with recent digital ethics research, which emphasizes that digital competence and digital systems should be supported by ethical judgment, value alignment, and responsible decision-making (Bian et al., 2025).

In Indonesian SMEs, this finding is particularly important because digital adoption is often driven by practical needs such as market access, transaction recording, customer service, and operational efficiency. This is consistent with prior evidence that SME digitalization often emphasizes operational efficiency and innovation, while ethical and governance dimensions remain less developed (Nazaruddin et al., 2024). The findings suggest that SME digitalization programs should not focus only on adopting applications or platforms. They should also integrate ethical awareness, responsible data use, basic internal controls, and accountability practices. Therefore, this mediation confirms that DT's effectiveness in FP depends heavily on its ability to strengthen EC.

The full mediation finding also provides a practical warning: investing in digital tools without strengthening EC may not produce meaningful fraud-prevention benefits. For SME owners and managers, digital systems should be accompanied by clear access rights, transaction documentation, data verification, periodic review, and ethical rules for using digital records.

The Mediating Role of Ethical Climate in the Relationship Between MCS and Fraud Prevention

The findings indicate that EC significantly mediates the relationship between MCS and FP. MCS positively affects EC, with a coefficient of 0.354 and a moderate effect size of 0.191. MCS also has a positive direct effect on FP, with a coefficient of 0.345 and a moderate effect size of 0.168. In addition, the indirect effect of MCS on FP through EC is significant. This result indicates partial mediation, meaning that MCS strengthens FP through both direct control mechanisms and indirect ethical-climate mechanisms.

Theoretically, MCS guides behavior through monitoring, evaluation, reporting, feedback, and control systems (Chenhall, 2003). This finding is also consistent with Ethical Climate Theory because MCS contributes to EC when control procedures, reporting mechanisms, feedback, performance monitoring, and operational oversight communicate ethical expectations and reinforce accountability. In this sense, MCS not only regulates behavior administratively but also helps build shared perceptions about what is

acceptable, responsible, and ethical within the organization.

This finding supports the organizational governance and control perspective used in this study. MCS can reduce fraud risks by clarifying responsibilities, monitoring transactions, improving reporting, and supporting corrective actions. However, MCS is more effective when these controls are embedded in the organization's ethical climate. Controls that are perceived merely as administrative requirements may lead to surface-level compliance, whereas controls embedded in EC can foster deeper commitment to integrity and FP. This view is consistent with prior research suggesting that control systems and ethical work climates are interconnected in shaping ethical organizational behavior (Bellora-Bienengräber et al., 2022; Goebel & Weißenberger, 2017; Newman et al., 2017).

These findings are also consistent with previous studies showing that effective internal control systems must be supported by organizational ethical values to achieve optimal outcomes (Astuti et al., 2024; Azizan & Ali, 2024; Rashid, 2022). For SMEs in Indonesia, this finding implies that even simple control mechanisms can be meaningful when applied consistently and supported by shared ethical norms. Practical examples include authorization procedures, transaction documentation, cash monitoring, periodic review, basic separation of duties where possible, reporting channels, and follow-up of irregularities. These practices strengthen FP not only by improving monitoring but also by signaling that integrity and accountability are expected organizational norms.

Overall, the findings show that EC is the central mechanism that explains why certain antecedents become effective in strengthening FP. The model's strong explanatory power, the significant mediating effects of EC, and its positive predictive relevance indicate that FP in SMEs should be understood as the result of interactions among individual ethics, digital practices, control systems, and shared ethical norms. Idealism and MCS have both direct and indirect effects; DT requires EC to become effective, and relativism weakens FP directly without shaping EC. These findings offer a more nuanced understanding of FP in SMEs and address the need to connect empirical results with both theory and the Indonesian SME context.

Conclusion

This study examines the role of individual ethical orientation, DT, and MCS in strengthening FP through the mediating effect of EC among SMEs in the Special Region of Yogyakarta. The findings align with the research objectives and the empirical results. Specifically, idealism, DT, and MCS positively affected EC, which in turn strengthened FP. Additionally, idealism and MCS also have significant direct effects on FP. Conversely, DT does not show a significant direct effect on FP but instead operates indirectly through EC. Relativism does not influence EC but has a negative direct effect on FP.

The mediation findings confirm that EC serves as a key mechanism in mediating the relationships between idealism, DT, MCS, and FP. At the same time, no mediating role was found in the relationship involving relativism. These findings show that EC is not a universal mediator for all antecedents. EC mediates the effects of antecedents that can be internalized into shared ethical norms, such as idealism, DT, and MCS. However, relativism appears to operate more directly at the individual level and does not necessarily become part of a shared ethical climate.

Theoretically, this study contributes to the literature by proposing an integrative model based on a cross-level approach that links individual, organizational, and technological dimensions within a comprehensive conceptual framework. More specifically, this study extends SME fraud prevention literature by positioning EC as a key mechanism that connects individual ethical orientation, MCS, DT, and FP. The findings refine Ethical Position Theory by showing that idealism and relativism operate differently. Idealism strengthens FP both directly and through EC, whereas relativism weakens FP directly but does not influence EC. The findings also extend Ethical Climate Theory by showing that EC becomes an important mechanism when ethical values, control systems, and digital practices are internalized into shared organizational norms.

Practically, these findings imply that strengthening EC should be a primary priority in FP strategies, alongside reinforcing control systems and implementing DT grounded in ethical values. For SME owners

and managers, this means that FP should be supported by ethical leadership, clear codes of conduct, fraud awareness training, open reporting mechanisms, transaction documentation, and consistent monitoring practices. MCS should not only improve efficiency and performance but also strengthen ethical accountability through authorization procedures, periodic review, and follow-up mechanisms for irregularities.

The findings also have important implications for implementing DT in SMEs. Digital technology should not be treated merely as a technical tool because its direct effect on FP was not significant. Instead, DT becomes meaningful when it is supported by EC, access control, audit trails, data verification, and responsible use of digital records. Therefore, SMEs need to combine digital adoption with ethical awareness and internal control discipline so that digitalization strengthens transparency and traceability rather than creating new fraud opportunities. From a policy perspective, SME development programs should integrate digitalization initiatives with training in ethics, internal control, data protection, and fraud prevention. This is especially relevant in Indonesia, where SME digitalization is often promoted to improve competitiveness, but its governance and ethical dimensions also need strengthening.

Nevertheless, this study has several limitations. First, the cross-sectional design limits the ability to capture the dynamics of behavioral changes, digital adoption, and control systems over time. Second, the study's focus on SMEs within a single geographical region limits the generalizability of the findings to broader contexts. Third, the quantitative approach based on respondents' perceptions may introduce subjective bias, although the authors took procedural and statistical steps to reduce this risk.

Given these limitations, future studies should adopt longitudinal designs to observe changes in ethical behavior, EC, digital adoption, and control effectiveness over time. In addition, future research should expand the context to different sectors and geographical regions, and integrate mixed-method approaches to gain a more comprehensive understanding of FP mechanisms. Future studies may also explore other individual-level and organizational-level variables, such as ethical leadership, organizational culture, digital literacy, internal control maturity, fraud awareness, and owner-manager integrity, to further explain how ethical values and governance mechanisms strengthen FP in SMEs.

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