

ORIGINAL

The Effect of Leadership Antecedents on School Leaders' Decision-Making: The Mediating Role of Strategic Thinking

El efecto de los antecedentes de liderazgo en la toma de decisiones de los líderes escolares: el papel mediador del pensamiento estratégico

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ABSTRACT

Introduction: educational leadership today faces mounting complexity, requiring school leaders to make rapid yet well-reasoned decisions that influence institutional success. Existing leadership development programmes, such as the National Professional Qualification for Educational Leadership (NPQEL), emphasise strategic thinking and performance; however, the specific psychological and behavioural traits that underpin decision-making remain underexplored. This study aims to investigate how self-efficacy (a psychological trait) and ambidextrous leadership (a behavioural trait) influence school leaders' decision-making, with strategic thinking examined as a mediating cognitive process. Grounded in Social Cognitive Theory and Trait Theory, the research addresses a key gap in understanding how internal beliefs and adaptive leadership behaviours translate into decision-making competence through strategic cognition.

Method: a quantitative research design was employed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The sample comprised 275 school leaders across Malaysia who completed the NPQEL programme between 2018 and 2020. Data were analysed to test both direct effects and mediating pathways within a hypothesised structural model.

Results: the findings indicate that both self-efficacy and ambidextrous leadership significantly predict decision-making capability. Importantly, strategic thinking was found to partially mediate these relationships, suggesting that school leaders with greater emotional and behavioural adaptability leverage strategic cognition to make more effective decisions. These results reinforce the necessity for leadership programmes to move beyond technical training by incorporating strategies that foster psychological resilience and strategic cognitive development.

Conclusion: the study contributes to the theoretical advancement of educational leadership by integrating emotional, behavioural, and cognitive dimensions into a unified model of decision-making. Practically, it offers evidence-based insights for policymakers and educational institutions to enhance leadership preparation for complexity, ambiguity, and outcome-driven environments.

Keywords: Educational Leadership; Self-Efficacy; Ambidextrous Leadership; Strategic Thinking; Decision-Making; Leadership Development.

RESUMEN

Introducción: el liderazgo educativo actual se enfrenta a una creciente complejidad, lo que exige que los líderes escolares tomen decisiones rápidas pero bien razonadas que influyen en el éxito institucional. Los programas de desarrollo de liderazgo existentes, como la Calificación Profesional Nacional para el Liderazgo

Educativo (NPQEL), enfatizan el pensamiento estratégico y el desempeño; sin embargo, los rasgos psicológicos y conductuales específicos que sustentan la toma de decisiones siguen sin explorarse. Este estudio busca investigar cómo la autoeficacia (un rasgo psicológico) y el liderazgo ambidiestro (un rasgo conductual) influyen en la toma de decisiones de los líderes escolares, examinando el pensamiento estratégico como un proceso cognitivo mediador. Basada en la Teoría Cognitiva Social y la Teoría de los Rasgos, la investigación aborda una brecha clave en la comprensión de cómo las creencias internas y los comportamientos de liderazgo adaptativo se traducen en la competencia para la toma de decisiones a través de la cognición estratégica.

Método: se empleó un diseño de investigación cuantitativa mediante el Modelo de Ecuaciones Estructurales de Mínimos Cuadrados Parciales (PLS-SEM). La muestra estuvo compuesta por 275 líderes escolares de Malasia que completaron el programa NPQEL entre 2018 y 2020. Los datos se analizaron para evaluar tanto los efectos directos como las vías de mediación dentro de un modelo estructural hipotético.

Resultados: los hallazgos indican que tanto la autoeficacia como el liderazgo ambidiestro predicen significativamente la capacidad de toma de decisiones. Cabe destacar que se observó que el pensamiento estratégico media parcialmente estas relaciones, lo que sugiere que los líderes escolares con mayor adaptabilidad emocional y conductual aprovechan la cognición estratégica para tomar decisiones más efectivas. Estos resultados refuerzan la necesidad de que los programas de liderazgo vayan más allá de la formación técnica, incorporando estrategias que fomenten la resiliencia psicológica y el desarrollo cognitivo estratégico.

Conclusión: el estudio contribuye al avance teórico del liderazgo educativo al integrar las dimensiones emocional, conductual y cognitiva en un modelo unificado de toma de decisiones. En la práctica, ofrece perspectivas basadas en la evidencia para que los responsables políticos y las instituciones educativas mejoren la preparación del liderazgo en entornos complejos, ambiguos y orientados a los resultados.

Palabras clave: Liderazgo Educativo; Autoeficacia; Liderazgo Ambidiestro; Pensamiento Estratégico; Toma de Decisiones; Desarrollo del Liderazgo.

INTRODUCTION

Decision-making is an indispensable leadership competency, especially in complex institutional environments such as schools. School leaders are expected to make high-stakes decisions that influence not only academic performance but also teacher morale, community trust, and organizational innovation.⁽¹⁾ These challenges are magnified in Malaysia's public education system where the Ministry of Education Malaysia (MOE) enforces rigorous expectations through national policies like the Malaysian Education Blueprint 2013-2025.⁽²⁾ The Blueprint identifies leadership as the second most impactful school-based factor after teacher quality. Despite these strategic goals, persistent limitations in governance structure such as bureaucratic rigidity, limited local autonomy, and inconsistent leadership development have created concerns over whether existing training programs sufficiently prepare school leaders for complex decision-making demands. To address these issues, the MOE mandates the completion of the National Professional Qualification for Educational Leadership (NPQEL), designed to ensure that every school leader possesses high-performance competencies. Among the ten core competencies evaluated in NPQEL, strategic thinking and decision-making are central to school leadership effectiveness. However, practical gaps remain: some leaders, even after completing NPQEL, struggle to apply strategic insights in ambiguous or high-pressure environments, suggesting that psychological and behavioral traits may mediate the translation of training into practice.

In this context, two key constructs self-efficacy and ambidextrous leadership—offer valuable explanatory power. While both influence leadership behavior, they operate at distinct levels. Self-efficacy, rooted in Bandura's Social Cognitive Theory, refers to an individual's belief in their capacity to execute tasks under varying conditions. It is a cognitive-affective trait that shapes persistence, resilience, and initiative—core to strategic foresight and judgment. In contrast, ambidextrous leadership, as conceptualized by Rosing et al.⁽³⁾, blends exploitative (routine, structured) and explorative (innovative, adaptive) behaviors. It draws from Trait Theory of Leadership, which emphasizes the role of inherent personality traits in determining leadership effectiveness. Though ambidextrous leadership may exhibit outcomes like those fostered by self-efficacy such as proactive thinking and adaptive action, the two constructs differ in origin and application. Self-efficacy influences internal motivation and confidence, while ambidextrous leadership focuses on external behavioral flexibility. Notably, the integration of these traits through strategic thinking may determine how well a school leader can synthesize data, anticipate long-term consequences, and make informed decisions. Strategic thinking itself is a meta-cognitive skill essential for navigating complex systems, aligning short-term execution with long-term vision. Therefore, this study is grounded in Trait Theory and Social Cognitive Theory to explore how self-efficacy and ambidextrous leadership independently influence decision-making through the mediating

role of strategic thinking. By testing this mediation model, the study aims to generate theoretical insights and practical implications that can refine leadership training and governance frameworks in Malaysia's educational sector.

LITERATURE REVIEW

This section shows the critical literature on understudy variables along with association among them in the following subsections.

Self-Efficacy and Leadership Decision-Making

Self-efficacy, as defined by Bandura, refers to an individual's belief in their ability to successfully perform specific tasks. In the context of educational leadership, self-efficacy has been shown to influence a leader's ability to motivate others, manage stress, and make informed decisions.⁽⁴⁾ Although prior studies establish the relevance of self-efficacy in general leadership effectiveness, its direct impact on decision-making in educational governance remains underexplored. Baroudi and Hojeij⁽⁵⁾ found high self-efficacy among both public and private school principals in Lebanon, suggesting a consistent link between efficacy and leadership outcomes, including decision quality. Low self-efficacy, by contrast, is associated with emotional burnout, reduced task persistence, and decision paralysis.⁽⁶⁾ Importantly, self-efficacy operates as a foundational mechanism within Social Cognitive Theory, where individuals regulate their actions through self-observation and evaluative judgment. This internal regulation suggests that school leaders with high self-efficacy are more likely to engage in deliberate and confident decision-making. Hence, the following hypothesis is proposed:

H1: There is a significant relationship between self-efficacy and decision-making among school leaders.

Self-Efficacy and Strategic Thinking

Strategic thinking is a metacognitive skill that enables leaders to anticipate change, evaluate options, and plan long-term outcomes. Self-efficacy has been found to influence such cognitive activities by enhancing confidence in navigating ambiguity and complexity.⁽⁷⁾ Arabacı⁽⁸⁾ concluded that principals with high self-efficacy demonstrate stronger instructional and strategic leadership. Bajcar et al.⁽⁹⁾ categorized strategic thinking into behavior- and thought-oriented domains, identifying self-efficacy as a key driver of the latter. This is theoretically coherent with Social Cognitive Theory, which posits those beliefs about self-efficacy influence thought patterns and learning approaches—key ingredients of strategic cognition. Therefore:

H2: There is a positive influence of self-efficacy on strategic thinking among school leaders.

Ambidextrous Leadership and Decision-Making

Ambidextrous leadership refers to a leader's capacity to simultaneously manage exploitative (routine-based) and explorative (innovation-driven) demands.⁽³⁾ Such leaders can balance short-term efficiency with long-term adaptability, an essential skill in educational institutions undergoing frequent reforms. Although the concept shares overlapping territory with transformational and transactional leadership, ambidextrous leadership is distinct in its dynamic behavioural switching.

Studies have shown a direct relationship between ambidextrous leadership and decision-making agility.^(10,11) This aligns with Trait Theory of Leadership, which proposes that certain cognitive-behavioural profiles, such as flexibility and tolerance for complexity, enhance leadership effectiveness. Leaders with ambidextrous traits are better equipped to handle uncertainty and make context-sensitive decisions. Hence:

H3: There is a positive influence of ambidextrous leadership on decision-making among school leaders.

Ambidextrous Leadership and Strategic Thinking

The ability to shift between exploitative and explorative behaviors is inherently linked to strategic cognition. Ambidextrous leaders are required to constantly reassess goals, manage competing priorities, and synthesize feedback—processes aligned with strategic thinking.^(12,13) Kooi⁽¹⁴⁾ found that cognitive flexibility moderates the effectiveness of ambidextrous leadership, further supporting the argument that strategic thinking is embedded within this leadership style.

Theoretically, Trait Theory helps explain how these leaders leverage personal cognitive attributes to drive strategic insight, while SCT frames how learned behaviors evolve through experience and reflection. Therefore:

H4: There is a positive influence of ambidextrous leadership on strategic thinking among school leaders.

Strategic Thinking and Decision-Making

Strategic thinking is a precursor to rational and innovative decision-making. It helps school leaders scan the environment, evaluate multiple options, and anticipate consequences.^(15,16) Shaked and Schechter⁽¹⁷⁾ emphasize that systems thinking—a dimension of strategic thinking—expands leaders' capacity to weigh alternatives and recognize interdependencies. Alatailat et al.⁽¹⁸⁾ demonstrate that strategic thinking influences organizational

performance through improved managerial decision-making.

While international research supports this relationship, empirical studies in the Malaysian education sector are limited, creating an important gap. Thus:

H5: There is a positive influence of strategic thinking on decision-making among school leaders.

Strategic Thinking as a Mediator

Although both self-efficacy and ambidextrous leadership are associated with decision-making, their influence may be indirect, operating through strategic thinking. Prior research shows that strategic cognition mediates leadership behaviors and organizational outcomes.^(19,20) Bajcar et al.⁽⁹⁾ argue that strategic thinking is a conduit through which leadership styles—particularly those requiring cognitive complexity—manifest in decision outcomes. This study therefore proposes two mediation hypotheses:

H6: Strategic thinking mediates the relationship between self-efficacy and school leaders' decision-making.

H7: Strategic thinking mediates the relationship between ambidextrous leadership and school leaders' decision-making.

Based on the above explanations, this research develops a conceptual framework, presented in figure 1.

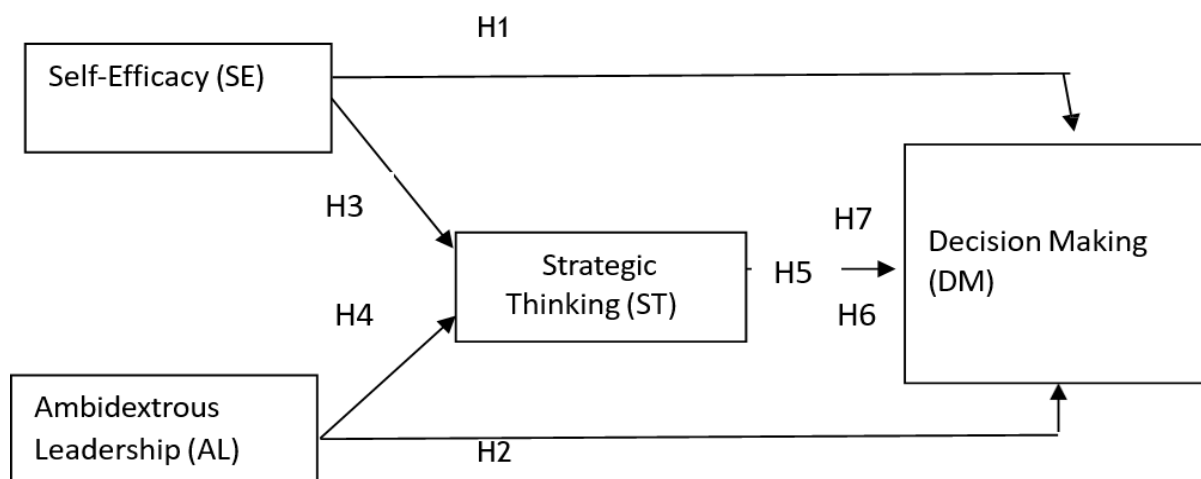


Figure 1. Conceptual Framework

METHOD

This study is a quantitative research study that utilizes partial least squares-structural equation modelling (PLS-SEM) to test hypotheses. PLS-SEM is a statistical technique that allows for the examination of multiple dependent and independent variables simultaneously. One advantage of PLS-SEM is that it does not assume a normal distribution, making it suitable for analyzing data in various fields, including business and social sciences.

⁽²¹⁾ In the context of this study, PLS-SEM was chosen as the appropriate statistical approach. The study focuses on school leaders who are currently employed by Malaysia's Ministry of Education (MOE). Only individuals who had completed the National Professional Qualifying for Education Leadership (NPQEL) programme from each of the five IAB (Institut Aminuddin Baki) branches—IAB Induk, IAB Cawangan Genting Highlands, IAB Cawangan Utara, IAB Cawangan Sabah, and IAB Cawangan Sarawak—were eligible to participate in the study.

The population in this study was the participants who attended the NPQEL programme between the years 2018 to 2020, a total of 3516. and was appointed as a school leader. This study utilised the G*Power software to calculate the sample size required for a two-tailed test with a small effect size (0,15), a power of 0,95, and a significance level of 0,05. The analysis indicated that a minimum of 146 samples was necessary to achieve a statistical power of 0,95 at the 0,05 level of significance. Meanwhile, Krejcie and Morgan (1970), stated that if the population size is 3500, then the sample size should be 346. Due to that, to maximize the response rate, the researcher circulated 350 sets of questionnaires. Out of the collected data, 275 respondents' data met the criteria for being returned and usable for analysis. Starting March 15, 2022, 350 questionnaires were delivered to responders. The first eight weeks had 170 (48,6 %), respondents complete the questionnaire. Another 107 (30,6 %), respondents answered after the reminder email until the questionnaire closed on 15 June 2022. There are 277 (79,1 %) respondents in this survey.

RESULTS

This study included a diverse range of participants. Out of the total respondents, 140 were male (50,9 %), and 135 were female (49,1 %). The largest ethnic group among the respondents was Malay, with 174 individuals (63,3 %), followed by the Chinese community with 69 individuals (25,1 %), and the Indian population with 6 respondents (2,2 %). Additionally, there were 15 respondents from the Bumiputera Sabah community (5,5 %) and 11 respondents from the Bumiputera Sarawak community (4,0 %).

Regarding age distribution, 6,9 % of the respondents fell within the 35-40 age range, with 19 respondents. The 41-45 age group accounted for 13,1 % of the total, with 36 respondents. Many participants (26,5 %) were in the 46-50 age range, represented by 73 individuals. Furthermore, 39,6 % of the respondents were aged 51-55, with 109 individuals in this category. Lastly, 13,8 % of the participants were 56 years old and above, represented by 38 respondents.

In terms of educational background, 0,7 % of the respondents held a Doctor of Philosophy degree (2 individuals). The majority (74,2 %) had a First Degree, with 204 individuals falling into this category. Additionally, 20,4 % held a master's degree (56 individuals), while 4,7 % had a Diploma or equivalent qualification (13 individuals).

In relation to the NPQEL Year/Cohort, 25,5 % of the respondents participated in 2018 (70 individuals), while the largest cohort was from 2019, accounting for 55,6 % of the respondents (153 individuals). The 2020 cohort represented 18,9 % of the participants (52 individuals). Regarding experience as a Senior Leader Team, 27,3 % of the participants had 1 to 3 years of experience (75 individuals), 19,3 % had 4 to 6 years of experience (53 individuals), and the majority (53,5 %) had over 6 years of experience (147 individuals). Among the respondents, 17,5 % (48 individuals) had not appointed as School Leaders, while the majority (82,5 %) had been appointed as School Leaders (227 individuals).

The high Cronbach's alpha (0,931) suggests good internal consistency within the scale items measuring ambidextrous leadership (AL). The composite reliability measures ($\rho_a = 0,936$ and $\rho_c = 0,940$) further support the reliability of the AL construct. The AVE of 0,514 indicates that 51,4 % of the variance in the observed variables is explained by the underlying construct, indicating acceptable convergent validity. The Cronbach's alpha of 0,919 suggests good internal consistency within the decision making (DM) scale. The composite reliability measures ($\rho_a = 0,923$ and $\rho_c = 0,931$) indicate the reliability of the DM construct. The AVE of 0,510 suggests that 51 % of the variance in the observed variables is explained by the underlying construct, supporting convergent validity.

The Cronbach's alpha of 0,852 indicates acceptable internal consistency within the self-efficacy (SE) scale. The composite reliability measures ($\rho_a = 0,859$ and $\rho_c = 0,886$) suggest good reliability for the SE construct. The AVE of 0,527 implies that 52,7 % of the variance in the observed variables can be attributed to the underlying construct, indicating convergent validity. The Cronbach's alpha of 0,920 indicates good internal consistency within the ST scale. The composite reliability measures ($\rho_a = 0,928$ and $\rho_c = 0,932$) further support the reliability of the ST construct. The AVE of 0,515 suggests that 51,5 % of the variance in the observed variables is explained by the latent construct, providing evidence for convergent validity.

Overall, these reliability and validity measures indicate that the constructs of ambidextrous leadership, decision making, self-efficacy, and strategic thinking have good reliability and acceptable convergent validity. These findings suggest that the measurement instruments used to assess these constructs are reliable and valid for studying the related phenomena. The Heterotrait-Monotrait Ratio (HTMT) assesses the discriminant validity of the constructs by comparing the correlations between different constructs to the correlations within the same construct. Here are the HTMT ratios based on the provided data:

Constructs	Ambidextrous Leadership	Decision Making	Self- Efficacy	Strategic Thinking
Ambidextrous Leadership				
Decision Making	0,793			
Self- Efficacy	0,690	0,692		
Strategic Thinking	0,891	0,794	0,684	

In the HTMT matrix, the values above the diagonal represent the HTMT ratios, indicating the extent to which the constructs exhibit discriminant validity. Ideally, the HTMT ratios should be below a certain threshold (e.g., 0,85) to establish discriminant validity.

Based on the provided matrix, it can be observed that all the HTMT ratios are below the threshold of 0,85, indicating good discriminant validity among the constructs. This suggests that the constructs of ambidextrous leadership, decision making, self-efficacy, and strategic thinking are distinct from each other and measure

different underlying dimensions.

In summary, the HTMT ratios support the discriminant validity of the constructs, indicating that there is sufficient differentiation between the constructs in terms of their underlying dimensions.

Table 2. Direct relationship					
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
AL -> DM	0,256	0,257	0,056	4,594	0,000
SE -> DM	0,057	0,058	0,022	2,557	0,011

Table 3. Indirect relationship					
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
AL -> ST -> DM	0,256	0,257	0,056	4,594	0,000
SE -> ST -> DM	0,057	0,058	0,022	2,557	0,011

According to a study on school leader's capabilities in decision making the analysis revealed significant findings. ambidextrous leadership, with a sample mean of 0,257 (SD = 0,056), demonstrated a substantial positive impact on decision making (T = 4,594, $p < 0,001$). This suggests that leaders who exhibit ambidextrous qualities, effectively balancing exploration, and exploitation, are more adept at making decisions that drive positive outcomes. Additionally, self-efficacy, with a sample mean of 0,058 (SD = 0,022), exhibited a moderately positive influence on decision making (T = 2,557, $p = 0,011$). This implies that leaders who possess a strong belief in their own abilities and confidence are better equipped to make effective decisions for their schools."

DISCUSSIONS

Leaders who possess a strong belief in their own abilities and confidence, as indicated by their self-efficacy, exhibit a moderately positive influence on decision-making.^(22,23) Previous research has emphasized the significance of self-efficacy in leadership effectiveness, highlighting its role as a predictor of motivation and its potential impact on decision-making competency. Studies have shown that self-efficacy scores are high among school leaders, indicating their influence on various aspects of leadership practices, including decision-making.^(23,24,25) It is crucial to consider these aspects when preparing future school leaders, as poor self-efficacy can lead to reduced effectiveness and emotional and physical dysfunction. The positive relationship between perceptions of self-efficacy and efficient school leadership further underscores the importance of self-efficacy in predicting leadership effectiveness.⁽²⁶⁾ Beliefs about self-efficacy shape individuals' thinking patterns and emotions, influencing their actions and potential for success or failure. Additionally, self-efficacy is a component of thinking-oriented strategies, specifically in the dimension of strategic thinking. Therefore, exploring the impact of self-efficacy on strategic thinking among school leaders is a valuable area of investigation.

Ambidextrous leadership refers to the fusion of exploration and exploitation leadership styles, where leaders possess a cognitive prowess and flexible mindset to navigate through conflicting situations.⁽²⁷⁾ They skillfully balance long-term growth with short-term gains, adeptly employing organizational exploration and exploitation. Findings from studies by Shon⁽¹¹⁾ and Luo et al.⁽¹⁰⁾ affirm the positive correlation between ambidextrous leadership, effective decision-making, and project success. Furthermore, individual cognitive flexibility acts as a moderating force in the realm of ambidextrous leadership. Within the realm of ambidextrous leadership, the complexity of behavior and cognition, inclusive thinking, integration, emotional intelligence, and forecasting contribute to the leadership fabric.⁽²⁸⁾ Ambidextrous leaders continuously contemplate the exploration and exploitation of ideas, employing their cognitive complexity to lead creative and innovative teams and individuals.^(29,30)

This study highlights several important avenues for future research in the field of school leadership. Longitudinal studies can provide valuable insights into the stability and development of school leader capabilities over time. Understanding the influence of contextual factors on leadership capabilities will offer a more nuanced understanding of effective leadership practices in diverse settings. Comparative studies across different educational systems can shed light on cultural and contextual influences on leadership capabilities. Additionally, exploring the relationship between school leader capabilities and various leadership outcomes will establish the practical significance of these constructs and their implications for improving educational outcomes. Investigating mediating and moderating factors can provide insights into the underlying mechanisms through which capabilities impact leadership effectiveness. Employing a mixed- methods approach will offer a comprehensive understanding of the complexities of leadership capabilities and their impact. Extending the validation of constructs to different educational roles and evaluating the effectiveness of leadership development programs will provide evidence-based recommendations for enhancing leadership capabilities.

CONCLUSIONS

By pursuing these future research directions, we can advance our knowledge of school leader capabilities and their impact on leadership effectiveness. These research avenues hold great potential for informing policies and practices aimed at improving leadership development and promoting positive educational outcomes. Ultimately, this research will contribute to the ongoing efforts to cultivate effective school leaders who can lead schools towards success and create a conducive learning environment for students.

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The authors declare that there is no conflict of interest.

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