

RESEARCH ARTICLE



Integrating Personality Traits in AI-driven Business Leadership: The Role of Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership Using the FIKR Personality Assessment Tool

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Abstract: In the rapidly evolving landscape of AI-driven business environments, the integration of key personality traits—Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership—into leadership practices is becoming increasingly crucial. This study explores the significance of these four traits in enhancing business leadership in the AI era. By analyzing data from 409 respondents using the FIKR personality assessment, the study identifies how these traits contribute to effective leadership, particularly in managing the human-AI interface, driving performance, making data-driven decisions, and ensuring the ethical implementation of AI technologies. The findings highlight that leaders who cultivate these traits are better equipped to navigate the complexities of modern business environments, ensuring that AI enhances rather than disrupts organizational success. The study concludes that the future of business leadership lies in harmonizing human traits with AI capabilities to drive innovation, ethical decision-making, and sustainable growth. In conclusion, integrating Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership into leadership practices is crucial for navigating the challenges and opportunities presented by the AI era. These traits enable leaders to manage the human-AI interface effectively, drive innovation, make data-driven decisions, and implement AI technologies responsibly. As AI continues to reshape the business world, leaders who cultivate these traits will be better equipped to lead their organizations to success, ensuring that AI enhances rather than disrupts their operations. This finding will explore how these traits are interconnected and how they can be harnessed to achieve effective and ethical leadership in the AI-driven business landscape.

Keywords: emotional intelligence, achievement orientation, analytical thinking, structured leadership, AI-driven business

1. Introduction

The rapid rise of artificial intelligence (AI) is fundamentally reshaping business environments, driving unprecedented innovation, efficiency, and competitiveness across industries [1]. As organizations increasingly rely on AI to automate processes, analyze vast datasets, and support decision-making, leadership roles must evolve to meet the demands of this AI-driven era. Contemporary business leaders must embrace AI technologies and navigate the intricate interplay between human resources and AI systems, ensuring that technology enhances, rather than disrupts, organizational goals [2]. In this evolving landscape, integrating specific personality traits such as Emotional Intelligence,

Achievement Orientation, Analytical Thinking, and Structured Leadership into leadership practices is critical to driving success and sustainability in AI-driven organizations [3].

While AI excels in processing data, identifying patterns, and optimizing operations, it lacks a nuanced understanding of human emotions, social interactions, and individual needs. This gap necessitates business leaders cultivate Emotional Intelligence to maintain a positive organizational culture and address challenges such as employee concerns over job displacement due to automation [4, 5]. Achievement Orientation becomes pivotal as leaders drive their teams to pursue innovation and continuous improvement, which is essential for thriving in rapidly changing AI environments [6]. Leaders skilled in Analytical Thinking are better equipped to interpret AI-generated data and make informed decisions, ensuring that technological advancements align with

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strategic objectives [5, 7]. Furthermore, Structured Leadership is vital for managing the complexities introduced by AI, including ethical considerations and balancing AI’s capabilities with human oversight [8].

Despite the growing recognition of the importance of these traits in the AI context, there is a notable gap in the literature regarding how these personality traits collectively influence leadership effectiveness in AI-driven businesses. Most studies focus on isolated traits rather than examining the interplay between Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership in managing AI-integrated organizations [9]. Additionally, while much of the research explores AI’s impact on operational and technical aspects, there remains limited empirical analysis on how leadership traits facilitate the ethical, sustainable, and human-centered integration of AI within business operations [5, 10, 11]. This study aims to fill this gap by exploring how these four key traits contribute to effective AI leadership and their roles in navigating the complex challenges and opportunities AI presents.

The hypotheses of this study are as follows:

- 1) H1: Emotional trait will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions.
- 2) H2: Achievement orientation will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions.
- 3) H3: Analytical Thinking will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions).
- 4) H4: Structured persons will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions.

Current literature provides significant insights into the role of leadership in AI contexts, yet there is a lack of comprehensive studies that explore the intersection of multiple personality traits

in driving leadership effectiveness [12]. This research, however, aims to fill this gap by providing a comprehensive analysis of the role of key personality traits in enhancing leadership in AI-driven business environments. Emotional Intelligence has been widely recognized for its importance in human-centered leadership, particularly in fostering employee engagement and resilience in AI-driven organizations [13, 14]. On the other hand, achievement orientation has been linked to leaders’ ability to inspire innovation and high team performance [5, 15]. Analytical Thinking is essential for leaders to interpret the complex data produced by AI systems and make decisions that ensure organizational agility and ethical responsibility [16]. Lastly, Structured Leadership has been identified as a critical component in managing the ethical deployment of AI, particularly in maintaining accountability and transparency within organizations [8].

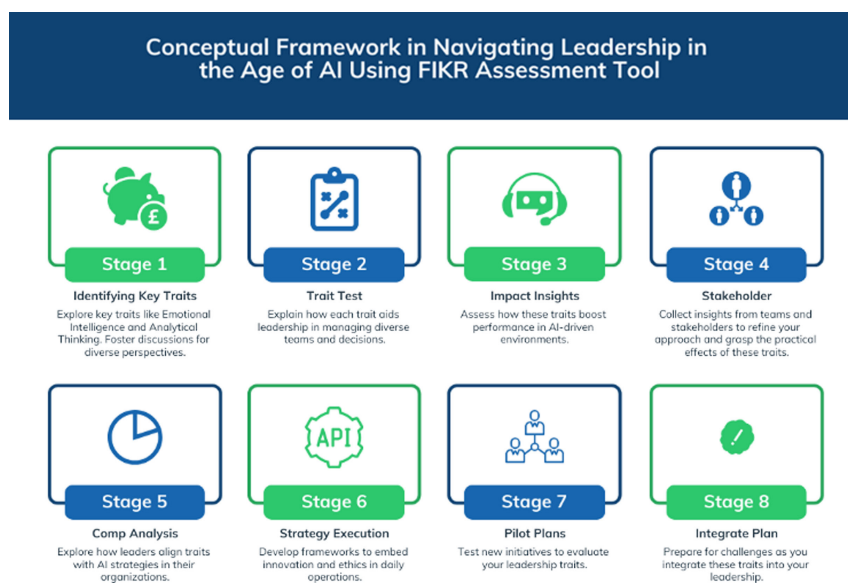
The FIKR (facet, insight, knowledge, and resilience) profiling assessment tool, utilized by Humanology Sdn. Bhd. [17], is a practical tool for integrating key personality traits—Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership—into leadership practices within the AI-driven business environment. This article not only explores how these traits enhance leaders’ ability to navigate the complexities of human-AI interaction, drive performance and ensure ethical AI implementation but also provides practical insights into how these traits can be harnessed to achieve effective and sustainable leadership in the rapidly evolving AI landscape. By understanding and applying these insights, leaders can better prepare themselves and their organizations for the challenges and opportunities presented by AI (Figure 1).

2. Methodology

2.1. Data collection and analysis

This study employs a quantitative research design to investigate the relationship between personality traits and leadership effectiveness in AI-driven business environments [18]. Using a

Figure 1
The conceptual framework in navigating leadership in the age of AI using FIKR assessment tool in the present study



structured survey allows for the collection of standardized data that can be analyzed statistically to identify trends and correlations. The objective nature of the FIKR supports the decision to utilize a quantitative approach (FIKR) personality assessment tool, which measures 20 different personality traits in a business context [17].

For the study population and sampling technique, this study consists of 409 business leaders from various sectors, all operating in AI-integrated environments. This population was chosen because the role of leadership in AI-driven businesses is increasingly recognized as a critical factor in organizational success [9]. The sampling technique used was purposive sampling, often employed in business and leadership research to ensure that the participants possess specific characteristics relevant to the study’s objectives [19]. In this case, participants were required to hold leadership positions in organizations utilizing AI technologies, as this ensured that their experiences and traits would be directly applicable to the research questions.

The respondents were recruited through professional networks and business leadership forums, targeting leaders from finance, manufacturing, and technology, where AI is frequently integrated into decision-making and operations. This purposeful sampling was essential to ensure that the study focused on individuals who could provide relevant insights into leadership in AI [20].

Data Collection Procedures: Data were collected using the FIKR Personality Assessment Tool, a comprehensive questionnaire designed to measure 20 personality traits across a broad spectrum of leadership dimensions. The FIKR tool has been used extensively in leadership and organizational studies, particularly in settings where personality traits play a critical role in performance and decision-making [17]. The tool includes 200 items, each measured using a dichotomous scale (Yes = 1, No = 0), allowing respondents to quickly and easily provide their answers. Dichotomous scales are widely recognized for their simplicity and efficiency, particularly in large-scale surveys, where ease of response can increase the accuracy and completeness of data collection [21].

Correlation analysis and multiple regression analysis were conducted using the NCSS package [22] to examine the relationships between Emotional, Achievement, Analytical, and Structured personality traits and the other 17 personality traits measured by the FIKR Profiling Assessment Tool. This statistical approach was chosen because it is well-suited to exploring the predictive power of multiple variables on leadership effectiveness.

2.2. Reliability and validity test results

The reliability of the FIKR Personality Assessment Tool was tested using Cronbach’s Alpha, a measure commonly used to assess internal consistency in psychological instruments [23]. In this study, Cronbach’s alpha for the FIKR tool was 0.89, indicating high reliability. This suggests that the items in the survey consistently measure the personality traits in question, making the tool appropriate for use in leadership studies where consistent measurement is critical.

Both content and construct validity were assessed to ensure the instrument’s validity. Expert reviews established content validity, where psychologists and business experts confirmed that the questionnaire items represented the personality traits being measured [24]. Construct validity was evaluated using factor analysis, which confirmed that the FIKR tool accurately measures distinct personality traits without overlap, supporting its use for investigating complex psychological constructs such as leadership and AI interactions [25]. Given these test results, the study meets

acceptable standards for both reliability and validity, ensuring that the findings are robust and can be generalized across similar populations.

Furthermore, the study’s standardized assessment tool enhances its potential for replication. Given that the FIKR Personality Assessment Tool is well-established and widely used in leadership research, this study can be replicated in different contexts, such as non-business sectors or cultural settings. The tool’s proven reliability and validity ensure that the methodology can be applied to other industries or geographical regions where AI integration and leadership dynamics may vary, making this research replicable and adaptable to diverse organizational environments [26].

3. Results

Table 1 shows the overall descriptive statistics of personality traits. The mean age is 29.14, ranging from 20 to 53 years.

Table 2 provides the demographic breakdown of the study sample, highlighting key characteristics such as age, gender, educational level, and industry sector. The inclusion of this data ensures that the study’s findings can be generalized across similar populations.

Tables 3 and 4 present the regression analysis and correlation analysis results, respectively, for four significant personality traits—Emotional, Achievement, Analytical, and Structure—with 19 other traits and four demographic variables from the FIKR personality assessment.

3.1. Emotional trait

The Emotional trait demonstrates a significant R^2 value of 0.427, indicating that approximately 42.7% of the variability in emotional expression can be explained by the predictors included

Table 1
Overall descriptive statistics of all the 20 personality traits and 1 demographic variable. $N = 409$. $SD =$ standard deviation

Variable	Mean	SD	Minimum	Maximum
Age	29.14	6.63	20	53
Endurance	8.34	1.22	2	10
Variety	6.76	1.62	1	10
Aggressive	6.63	1.60	0	10
Self-criticism	3.98	2.09	0	10
Intuition	7.79	1.22	1	10
Dependent	6.57	1.73	0	10
Nurturance	9.25	1.14	2	10
Emotional	2.79	2.11	0	9
Extrovert	7.26	2.29	0	10
Achievement	7.94	1.24	0	10
Support	6.41	1.97	0	10
Analytical	7.67	2.10	0	10
Perceiver	5.01	1.47	0	10
Structure	8.69	1.12	1	10
Intellectual	6.58	2.00	0	10
Self-concept	8.36	1.13	2	10
Autonomy	6.39	1.64	0	10
Introvert	5.10	2.06	0	10
Control	4.92	2.48	0	10
Lie scale	5.14	2.15	0	10

Table 2
Demographics of the study sample (N = 409).

Variable	Category	Frequency (n)	Percentage (%)
Age	20–29 years	132	32.3%
	30–39 years	175	42.8%
	40–49 years	78	19.1%
	50–53 years	24	5.9%
Gender	Male	240	58.7%
	Female	169	41.3%
Marital Status	Single	211	51.6%
	Married	198	48.4%
Educational Level	Bachelor’s Degree	233	57.0%
	Master’s Degree	148	36.2%
	PhD	28	6.8%
Industry Sector	Finance	117	28.6%
	Manufacturing	92	22.5%
	Technology	104	25.4%
	Other	96	23.5%

in the model. The significant predictors for this trait include Gender ($\beta = 0.835, p < 0.05$), suggesting that this demographic variable strongly influences emotional responses. Support ($\beta = 0.226,$

$p < 0.05$), Perceiver ($\beta = 0.222, p < 0.05$), Self-criticism ($\beta = 0.328, p < 0.05$), and Nurturance ($\beta = -0.174, p < 0.05$) positively influence the Emotional trait, implying these traits are likely to be more emotional in business leadership (Table 3).

Relatively strong positive correlation coefficients to the Emotional trait are found for Self-criticism ($R = 0.52$), Support ($R = 0.40$), Perceiver ($R = 0.33$), and Introvert ($R = 0.40$), (Table 3). All four demographic variables are weakly or not correlated with the Emotional trait (Table 4).

3.2. Achievement trait

The Achievement trait has an R^2 value of 0.372, meaning that the predictors account for 37.2% of the variance in this trait. Notably, Age ($\beta = -0.029, p < 0.05$) is a significant negative predictor, indicating that as individuals age. Conversely, Support ($\beta = 0.077, p < 0.05$), Intellectual ($\beta = 0.084, p < 0.05$), Lie scale ($\beta = -0.059, p < 0.05$), endurance ($\beta = 0.202, p < 0.05$) and Dependence ($\beta = 0.135, p < 0.05$) positively influence the Achievement trait, implying these traits are likely to be more achievement-oriented in business leadership (Table 3).

Relatively strong positive correlation coefficients to the Achievement trait are found for Endurance ($R = 0.36$), Intuition ($R = 0.31$), Dependency ($R = 0.32$), Extraversion ($R = 0.31$), Support ($R = 0.33$), and Intellectual ($R = 0.35$) (Table 3). All four demographic variables are weakly or not correlated with the Achievement trait (Table 4).

Table 3
Statistical outputs of predictors for four important personality traits (Emotional, Achievement, Analytical, and Structure) from FIKR’s 20 personality traits, using regression analysis. Based on 409 respondents. DV = dependent variable

	DV = Emotional	DV = Achievement	DV = Analytical	DV = Structure
Intercept	-1.830	Intercept 3.157	Intercept -1.767	Intercept 5.091
Age	0.016	Age -0.029	Age -0.008	Age -0.009
Marital	0.241	Marital -0.167	Marital 0.273	Marital 0.003
Religion	0.027	Religion -0.124	Religion -0.122	Religion -0.049
Gender	0.835	Gender 0.193	Gender -0.116	Gender -0.228
Extrovert	-0.040	Support 0.077	Perceiver 0.113	Intellectual 0.077
Achievement	-0.023	Analytical -0.003	Structure -0.087	Self-concept 0.121
Support	0.226	Perceiver 0.016	Intellectual 0.435	Autonomy -0.049
Analytical	-0.028	Structure 0.066	Self-concept 0.058	Introvert 0.011
Perceiver	0.222	Intellectual 0.084	Autonomy 0.006	Control 0.012
Structure	0.015	Self-concept -0.016	Introvert 0.044	Lie scale 0.063
Intellectual	0.002	Autonomy 0.025	Control 0.078	Endurance 0.053
Self-concept	0.085	Introvert 0.007	Lie scale -0.046	Variety -0.046
Autonomy	0.013	Control 0.029	Endurance 0.116	Aggressive -0.023
Introvert	0.100	Lie scale -0.059	Variety 0.060	Self-criticism 0.033
Control	0.001	Endurance 0.202	Aggressive 0.067	Intuition 0.179
Lie_Scale	-0.001	Variety -0.005	Self-criticism 0.011	Dependent -0.017
Endurance	-0.118	Aggressive 0.020	Intuition 0.098	Nurturance 0.054
Variety	0.024	Self-criticism 0.031	Dependent -0.076	Emotional 0.006
Aggressive	0.112	Intuition 0.078	Nurturance 0.386	Extrovert 0.002
Self-criticism	0.328	Dependent 0.135	Emotional -0.024	Achievement 0.068
Intuition	-0.078	Nurturance 0.041	Extrovert 0.020	Support 0.092
Dependent	-0.008	Emotional -0.009	Achievement -0.008	Analytical -0.038
Nurturance	-0.174	Extrovert 0.059	Support 0.044	Perceiver -0.017
R ²	0.4272	R ² 0.3719	R ² 0.4938	R ² 0.2238

Note: Values in blue are significant predictors at $P < 0.05$

Table 4
Correlation coefficients between the four selected traits with the other 19 personality traits and four demographic variables from the present study. *N* = 409

Variables	Emotional	Variables	Achievement	Variables	Analytical	Variables	Structure
Endurance	-0.13	Endurance	0.36	Endurance	0.33	Endurance	0.27
Variety	0.19	Variety	0.24	Variety	0.29	Variety	0.09
Aggressive	0.20	Aggressive	0.29	Aggressive	0.35	Aggressive	0.19
Self-criticism	0.52	Self-criticism	0.18	Self-criticism	0.02	Self-criticism	0.06
Intuition	-0.03	Intuition	0.31	Intuition	0.38	Intuition	0.33
Dependent	0.30	Dependent	0.32	Dependent	0.05	Dependent	0.14
Nurturance	-0.14	Nurturance	0.24	Nurturance	0.39	Nurturance	0.17
Emotional	1.00	Emotional	0.11	Emotional	0.00	Emotional	0.04
Extrovert	-0.19	Extrovert	0.31	Extrovert	0.36	Extrovert	0.21
Achievement	0.11	Achievement	1.00	Achievement	0.30	Achievement	0.27
Support	0.40	Support	0.33	Support	0.17	Support	0.21
Analytical	0.00	Analytical	0.30	Analytical	1.00	Analytical	0.20
Perceiver	0.33	Perceiver	0.19	Perceiver	0.22	Perceiver	0.10
Structure	0.04	Structure	0.27	Structure	0.20	Structure	1.00
Intellectual	-0.03	Intellectual	0.35	Intellectual	0.62	Intellectual	0.30
Self-concept	0.04	Self-concept	0.20	Self-concept	0.23	Self-concept	0.26
Autonomy	0.10	Autonomy	0.16	Autonomy	0.23	Autonomy	0.11
Introvert	0.40	Introvert	0.10	Introvert	0.01	Introvert	0.03
Control	-0.04	Control	0.30	Control	0.46	Control	0.24
Lie scale	-0.11	Lie scale	0.11	Lie scale	0.19	Lie scale	0.22
Age	-0.07	Age	-0.17	Age	-0.06	Age	-0.04
Marital	0.13	Marital	-0.02	Marital	0.10	Marital	0.00
Religion	-0.08	Religion	-0.16	Religion	-0.10	Religion	-0.07
Gender	0.17	Gender	0.05	Gender	-0.06	Gender	-0.08

3.3. Analytical trait

The Analytical trait shows the highest R^2 value of 0.494, indicating that the model explains nearly half of the variance in analytical capabilities. Significant predictors include Intellectual ($\beta = 0.435, p < 0.05$), which positively affects analytical thinking, and Nurturance ($\beta = 0.384, p < 0.05$), suggesting care and concern for others' well-being contribute to enhanced analytical skills. These two traits (Intellectual $R = 0.62$; Nurturance $R = 0.39$) are also directly correlated positively with Analytical trait (Table 3).

Interestingly, Endurance ($R = 0.33$) and Aggressiveness ($R = 0.35$) have positive impacts, suggesting that more resilient individuals may have stronger analytical capabilities. A relatively strong positive correlation with Control ($R = 0.46$) is also found to be connected to Analytical traits. All four demographic variables are weakly or not correlated with Analytical traits (Table 4).

3.4. Structure trait

The Structure trait has the lowest R^2 value at 0.224, with predictors explaining 22.4% of the variance. Self-concept ($\beta = 0.121, p < 0.05$), Intellectual ($\beta = 0.077, p < 0.05$), Lie scale ($\beta = 0.063, p < 0.05$), Intuition ($\beta = 0.135, p < 0.05$), and Achievement ($\beta = 0.068, p < 0.05$) are significant positive predictors, indicating that leaders who possess the above five traits are more likely to have a structured approach to their leadership style (Table 3).

In the correlation analysis, Intuition ($R = 0.33$) and Intellectual ($R = 0.30$) have positive impacts on the persons with Structure trait, which might suggest that these two traits may have stronger

structured capabilities. All four demographic variables are weakly or not correlated with the Structured trait (Table 4).

The results of the correlation analysis (Figure 2) confirm the validity of the study's hypotheses:

- 1) H1: Emotional trait will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions ($r = 0.29$).
- 2) H2: Achievement orientation will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions ($r = 0.57$).
- 3) H3: Analytical Thinking will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions ($r = 0.63$).
- 4) H4: Structured persons will significantly ($P < 0.001$) and positively affect the leadership effectiveness in managing AI-human interactions ($r = 0.33$).

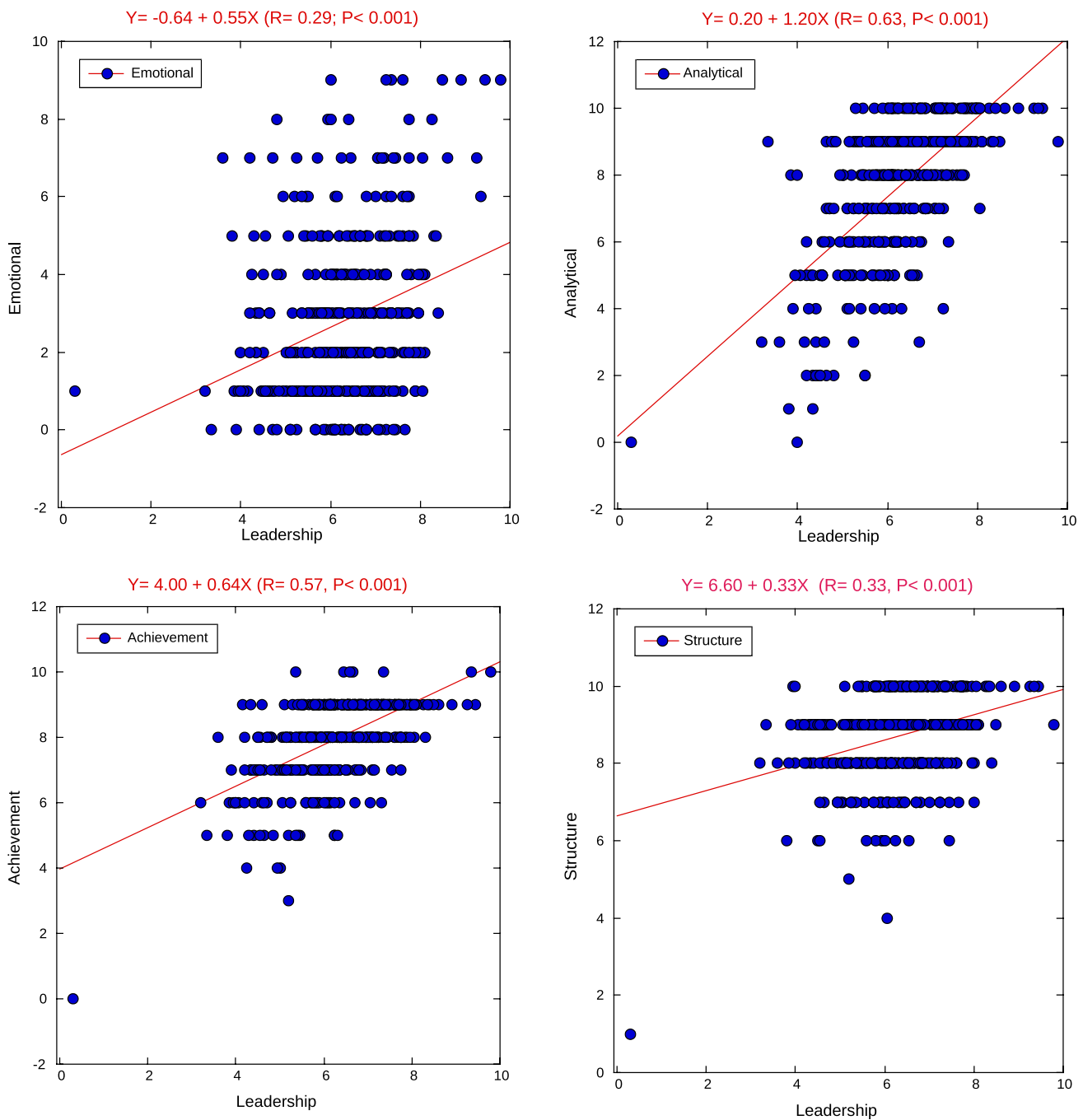
4. Discussion

4.1. Emotional intelligence and AI leadership

In today's increasingly AI-driven business landscape, emotional intelligence has emerged as a critical factor in leadership effectiveness, particularly in managing AI-human interactions. This aligns with H1 of the study, which hypothesizes that the emotional trait will significantly and positively affect leadership effectiveness in AI-driven contexts. Emotional intelligence, encompassing empathy, emotional regulation, and

Figure 2

Relationship between the selected personality traits (emotional, achievement, analytical, and structure) with leadership scores. The *R* values and significance levels are generated based on Pearson’s correlation analysis (*N* = 409).



Note: The leadership scores consist of Autonomy, Control, Achievement, Support, Analytical, Emotional, Extrovert, and Intellectual

interpersonal skills, is essential for leaders navigating the complexities of AI integration, as it enhances communication and relationship-building within organizations [27]. While AI tools deliver operational efficiency, they lack the human touch necessary for fostering trust, motivation, and collaboration, underscoring the need for leaders to develop strong emotional competencies [4].

As AI increasingly optimizes decision-making and operations, integrating emotional intelligence is crucial for maintaining a balance between technological efficiency and human connection, as

highlighted in H1. Leaders with high emotional intelligence are better equipped to drive long-term success by improving employee engagement and performance, particularly in dynamic roles and sectors [13]. The study’s findings support the hypothesis that emotional intelligence is not merely an added value but a fundamental component of leadership effectiveness in AI-human interaction management.

Furthermore, emotional intelligence is indispensable for leading diverse, globalized teams, as AI enables collaboration

across cultures and time zones. Leaders who can navigate the emotional intricacies of multicultural teams are better positioned to foster inclusive, harmonious environments, further reinforcing H1. Despite cultural differences, their ability to connect emotionally with team members allows them to fully leverage AI-driven collaboration tools, leading to innovative solutions and enhanced team dynamics.

Hence, the fusion of emotional intelligence with AI-driven strategies supports H1 by enabling leaders to harness AI's potential while preserving the human elements necessary for organizational success. Leaders with high emotional intelligence foster trust, inspire their teams, and navigate the complexities of AI-human interactions, making them more effective in driving sustainable innovation in an AI-integrated world.

4.2. Achievement orientation in AI-driven performance

In today's AI-driven business environment, the achievement trait has become increasingly significant for organizational leaders, directly supporting H2 of this study, which hypothesizes that achievement orientation will significantly and positively affect leadership effectiveness in managing AI-human interactions. Leaders who exhibit this trait are essential for driving ambitious goals and fostering a culture where innovation can flourish, ultimately enhancing team performance [6]. By promoting continuous learning and adaptability, achievement-oriented leaders enable organizations to remain agile despite rapid technological advancements and shifting market dynamics [5]. This adaptability boosts overall performance and increases employee engagement, as motivated teams are empowered to drive innovation and effectively respond to AI-related changes.

AI has fundamentally transformed organizational operations, offering leaders new opportunities to boost productivity, drive innovation, and achieve ambitious goals. Achievement-oriented leaders are crucial in championing this transformation, embracing a digital-focused mindset, and cultivating an organizational culture that prioritizes reskilling and talent retention [5]. These leaders invest in AI technologies and demonstrate authentic behaviors and a commitment to continuous learning, qualities that are critical for navigating the complexities introduced by AI [6, 8]. The data support H2, showing that achievement-oriented leaders are instrumental in managing the challenges of rapid technological change, inspiring their teams to embrace innovation and push the boundaries of what is possible [8, 16].

In addition to driving innovation, achievement-oriented leaders are key in building a resilient organizational culture capable of adapting to external disruptions such as economic fluctuations and global challenges. By leveraging AI, these leaders ensure that their organizations remain competitive and responsive in an increasingly volatile business environment [8]. This resilience is critical for maintaining long-term success in a rapidly evolving landscape, aligning with the objectives of this study to explore how key leadership traits contribute to effective AI leadership.

However, the focus on achievement in the AI era also presents challenges. The pressure to outperform competitors can create a hyper-competitive environment where ethical considerations may be overlooked. Achievement-oriented leaders must balance their drive for success with a commitment to ethical leadership, ensuring that AI-driven innovations do not compromise organizational values or the well-being of employees and customers. Maintaining this balance is essential for building a sustainable business model that thrives in the long term while

preserving ethical integrity. This nuanced understanding further reinforces H2, highlighting the importance of achievement-oriented leadership in managing AI-human interactions while upholding ethical standards.

4.3. Analytical thinking in AI-enhanced decision-making

As AI continues to shape business decision-making processes, the role of the Analytical trait among leaders has become increasingly critical, supporting H3 of this study, which posits that analytical thinking significantly and positively affects leadership effectiveness in managing AI-human interactions. Analytical leaders are pivotal in driving technological innovation and act as intermediaries, bridging the gap between advanced AI capabilities and practical leadership practices [9]. Their combination of technical expertise and problem-solving skills enables them to navigate the complexities of AI integration within organizations, positioning them as key figures in leveraging AI for strategic initiatives and securing sustainable competitive advantages [9].

Analytical leaders in the AI era go beyond simply interpreting data from AI systems. They foster a culture of continuous learning and adaptability, ensuring that their teams remain agile despite rapid technological changes [5]. Their leadership includes commitments to reskilling the workforce, advocating for ethical AI use, and encouraging innovation that responds to shifting market conditions. These leaders are instrumental in addressing the ethical challenges posed by AI, such as ensuring fairness and minimizing biases, thereby aligning their organizations with societal expectations for responsible AI usage [28].

Additionally, the responsibilities of analytical leaders extend to engaging with stakeholders across various sectors, fostering discussions on the broader implications of AI applications, and advocating for sustainability as a core organizational goal [16]. Their leadership is crucial in ensuring that AI technologies are economically advantageous and contribute positively to societal well-being. This highlights the importance of collaboration between industry leaders, governments, and local communities in promoting ethical AI practices [29]. Analytical leaders, therefore, play a central role in designing ethical AI frameworks that prioritize transparency and accountability while aligning organizational goals with sustainable practices and social impact [10, 30].

By integrating analytical leadership and sustainable practices, organizations are better equipped to navigate the AI-driven business landscape while contributing to broader societal goals. This underscores the intersection of leadership, technology, ethics, and social responsibility, reinforcing H3 by demonstrating how analytical thinking enhances leadership effectiveness in managing AI-human interactions and advancing sustainable business practices.

4.4. Structured leadership in AI implementation

Integrating the structure trait in leadership has become increasingly vital during AI-driven transformation, aligning with H4 of this study, which hypothesizes that structured individuals will significantly and positively affect leadership effectiveness in managing AI-human interactions. As organizations evolve digitally, structured leadership is crucial in ensuring AI technologies' sustainable and effective adoption [8]. With AI becoming integral to decision-making, leaders must adapt their strategies to emphasize authenticity and accountability, fostering a workplace culture that balances innovation with ethical integrity [31]. This balance is

essential as AI's influence grows, requiring leadership approaches that harmonize technological advancements with human elements such as collaboration and continuous learning.

Structured leaders are pivotal in navigating the complexities of AI integration by developing standardized processes that ensure consistency and reliability across the organization. This structured approach is critical for scaling AI initiatives, transitioning them from pilot phases to full-scale implementations, and minimizing risks while maximizing return on investment [8]. Furthermore, structured leadership fosters an environment where continuous improvement is prioritized, allowing organizations to manage AI development effectively through feedback loops and collaborative efforts across diverse teams.

In the broader context, integrating Emotional, Achievement, Analytical, and Structure traits into leadership practices is fundamental in the AI era. These traits equip leaders to manage the human aspects of AI, enhance performance, and make informed decisions, ensuring that AI technologies are implemented effectively and sustainably. As AI continues to reshape business landscapes, leaders who cultivate these traits will be better positioned to navigate the complexities of modern workplaces. The future of business leadership lies in the ability to blend these human traits with AI capabilities, creating a synergy that fosters innovation, ethical decision-making, and sustainable growth.

This further reinforces H4 by illustrating how structured leadership enhances the effective management of AI-human interactions, making it an essential component of leadership in the AI-integrated world.

4.5. Critical analysis of findings concerning research gaps, hypotheses, and contributions to AI-driven leadership literature

4.5.1. Emotional intelligence and leadership in AI-driven contexts

The results confirm H1, showing a significant positive correlation between Emotional Intelligence and leadership effectiveness in managing AI-human interactions. This finding aligns with previous research, which suggests that leaders with high Emotional Intelligence are better equipped to handle the emotional complexities associated with AI integration, such as alleviating employee concerns over job displacement [4, 5].

A notable gap in existing research, however, pertains to the lack of comprehensive analysis on how Emotional Intelligence interacts with the specific leadership challenges posed by AI. While earlier studies have primarily examined Emotional Intelligence within traditional business contexts [13, 27], the present study extends this understanding by demonstrating its critical relevance in AI-driven leadership environments. By addressing this gap, the research underscores the importance of Emotional Intelligence in fostering resilience, adaptability, and effective management of the balance between human and machine interactions during AI implementation.

4.5.2. Achievement orientation and innovation in AI contexts

The results support H2, indicating a strong positive relationship between Achievement Orientation and leadership effectiveness in managing AI-human interactions. Achievement-oriented leaders were found to drive innovation by setting ambitious goals and inspiring their teams to embrace AI technologies. This finding is consistent with earlier studies emphasizing the importance of goal-setting and achievement in leadership [6, 8].

A key gap in the existing literature pertains to the integration of Achievement Orientation within AI-driven leadership contexts. Few studies have examined how this trait directly influences innovation in technology-intensive environments. While previous research has broadly linked achievement motivation to leadership effectiveness [5], this study specifically demonstrates its critical role in AI leadership. By highlighting the importance of fostering a culture of continuous learning and adaptability in response to rapid technological change, this research fills a gap in understanding how Achievement Orientation drives performance and innovation in AI-integrated organizations.

4.5.3. Analytical thinking and ethical decision-making in AI

The study also confirms H3, showing that Analytical Thinking significantly affects leadership effectiveness in managing AI-human interactions. Leaders with strong analytical skills could better interpret complex data from AI systems and make decisions that align with organizational ethics and long-term sustainability. This finding corroborates previous research that underscores the importance of critical thinking in navigating AI's ethical challenges [9, 16].

However, this study fills an important gap by providing empirical evidence that Analytical Thinking is essential for ensuring that AI-driven decisions are both data-based and ethically sound. While earlier research has discussed AI ethics [29, 32], there has been little focus on the specific personality traits contributing to ethical leadership in AI contexts. This study addresses this gap by demonstrating that leaders with strong Analytical Thinking abilities are better positioned to mitigate the risks associated with AI deployment and ensure responsible decision-making.

4.5.4. Structured leadership and ethical AI implementation

Finally, H4 is supported by the finding that Structured Leadership positively and significantly affect leadership effectiveness in managing AI-human interactions. Leaders who exhibited structured approaches were more effective in ensuring that AI technologies were implemented responsibly, focusing on compliance with ethical standards and transparent decision-making processes. This result aligns with previous research on the role of structured leadership in managing complex technological transitions [8, 31].

A research gap in the literature exists regarding how structured leadership practices facilitate ethical AI integration. While past studies have discussed the importance of structure in leadership [5], this study extends these findings by demonstrating its importance specifically in the ethical implementation of AI. The study contributes to the growing body of literature by showing that structured leadership provides a necessary framework for balancing the innovative potential of AI with ethical considerations, ensuring that AI is used responsibly within organizations.

4.5.5. Addressing research gaps and practical implications

One of this study's key contributions is its ability to address several research gaps identified in the literature. First, it provides a more nuanced understanding of how specific personality traits—emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership—interact with the unique challenges posed by AI in business environments. While prior studies have broadly examined leadership in technology contexts, this research provides empirical evidence that these traits are critical for effective leadership in AI-driven organizations.

Second, the study aligns its findings with research questions and hypotheses, demonstrating the practical applications of these traits in enhancing innovation, managing AI-human interactions, and ensuring ethical AI implementation. The research also has practical implications for leadership development, suggesting that organizations should prioritize these personality traits in their training and recruitment processes, particularly as AI continues to transform the business landscape.

4.6. Theoretical integration and reconciliation of conflicting literature

4.6.1. Alignment with prior research

The study's results largely align with the authors' expectations and prior research, reinforcing existing theories about the importance of personality traits in leadership. For instance, the significant positive correlation between Emotional Intelligence and leadership effectiveness in managing AI-human interactions confirms previous studies that highlight the role of Emotional Intelligence in enhancing leadership performance in technology-driven environments [4, 5]. Similarly, the positive relationships between Achievement Orientation as well as Analytical Thinking and leadership effectiveness in managing AI-human interactions support the findings of earlier research on the critical role of these traits in fostering adaptive leadership in dynamic, AI-integrated business contexts [6, 16].

4.6.2. Addressing conflicting literature

While the results align with many existing studies, it is important to acknowledge the conflicting literature, which could provide a more balanced perspective on the findings. For Emotional Intelligence in AI-driven leadership, some studies argue that Emotional Intelligence might not be as influential in highly automated, AI-centric environments. Research by Nadeem [33] suggests that while technical skills are essential, soft skills like emotional intelligence are crucial for successful human-AI collaboration, driving innovation and ensuring AI's long-term viability within organizations, countering the notion that technical skills alone are sufficient.

However, the present study demonstrates that Emotional Intelligence remains crucial in managing the emotional and social dynamics of teams working with AI, bridging the gap between human and machine interactions. The conflicting viewpoint highlights the need for further research to explore how the role of Emotional Intelligence might vary depending on the level of AI integration within organizations.

While positively correlated with innovation, achievement orientation has been critiqued in some studies for potentially leading to unethical decision-making when leaders prioritize results over ethical considerations. For example, Manda et al. [34] suggests that achievement-oriented leaders can effectively balance innovation and ethical responsibility in AI implementation. By utilizing structured leadership approaches, they can align their goals with ethical principles, avoiding the sacrifice of long-term ethical considerations for short-term gains.

In contrast, this study finds no evidence of a negative association between Achievement Orientation and ethical AI implementation, suggesting that achievement-oriented leaders can balance innovation with ethical responsibility when equipped with a structured leadership approach. This divergence indicates that

context-specific factors, such as organizational culture and leadership development programs, may moderate the relationship between Achievement Orientation and ethics, warranting further investigation.

Although the study confirms the importance of Analytical Thinking in making ethical, data-driven decisions, some literature points out that over-reliance on data and analytical tools can lead to unintended ethical issues. Manda et al. [34] emphasize that ethical decision-making in AI requires balancing quantitative analysis with qualitative aspects. Leaders must integrate ethical principles like fairness and transparency, ensuring that both numerical data and human values are considered in decision-making processes.

The present study's findings challenge this view, showing that leaders with strong Analytical Thinking skills are better equipped to navigate ethical AI issues by making informed decisions. Nevertheless, the conflicting literature emphasizes the need to ensure analytical leaders are trained to incorporate qualitative ethical considerations into their decision-making processes.

By addressing these conflicting perspectives, the study offers a more comprehensive understanding of how personality traits influence leadership in AI-driven environments. Recognizing these divergent viewpoints provides a balanced discussion and suggests areas for future research to explore the nuances of leadership in different AI contexts.

4.6.3. Advancing the body of scientific knowledge

This study advances the current body of scientific knowledge in several key ways:

- a) **Filling Research Gaps:** The study addresses a critical gap in the literature by examining the intersection of Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership within AI-driven business environments. While previous research has focused on these traits in traditional leadership contexts, this study provides empirical evidence of their relevance in AI-intensive settings, where human-AI interaction, data-driven decision-making, and ethical considerations are paramount.
- b) **Expanding the Scope of Leadership Research:** This study expands the scope of leadership research by demonstrating that Emotional Intelligence, Analytical Thinking, and Structured Leadership are key to effectively navigating AI-human dynamics. It challenges the notion that AI diminishes the need for interpersonal traits and highlights the importance of balancing human qualities with AI capabilities to achieve ethical and sustainable business outcomes.
- c) **Bridging Theory and Practice:** The study bridges the gap between leadership theory and practical applications in AI-driven organizations. It provides clear evidence that leaders who exhibit these traits are better equipped to manage the complexities of AI integration, drive innovation, and ensure ethical practices, which can inform leadership development and training programs in AI-heavy industries.
- d) **Practical Implications for Leadership Development:** From a practical standpoint, the findings suggest that organizations should prioritize developing Emotional Intelligence and Analytical Thinking in their leadership teams, particularly in sectors heavily reliant on AI. This study offers a roadmap for leadership development, emphasizing the need to balance technical proficiency with emotional and ethical considerations in AI-driven business environments.

4.6.4. Limitations and future research directions

Although this study makes significant contributions, it has some limitations that open avenues for future research. First, the study is limited to AI-driven business environments and may not fully capture the complexities of leadership in non-business sectors where AI is used differently. Future research could explore the applicability of these findings in other contexts, such as healthcare or education, where AI integration is becoming increasingly common.

Additionally, while the study focuses on four key personality traits, future studies could investigate the influence of other traits, such as adaptability and risk tolerance, on leadership effectiveness in AI settings. These traits may also play a significant role in determining how leaders navigate the challenges and opportunities posed by AI.

4.7. Integrating key personality traits for effective leadership in AI-driven business environments

In the rapidly evolving AI-driven business landscape, leadership demands shift towards a more integrated approach where human traits must synergize with AI capabilities. Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership have emerged as pivotal traits that can enable leaders to navigate the complexities of this transformation. Previous research highlights the importance of personality traits in various business contexts, including their impact on leadership and organizational success [35, 36]. This study aims to extend these insights into the AI era, focusing on the significance of the four identified traits.

4.7.1. Emotional intelligence and human-AI interaction

Leaders with high Emotional Intelligence can foster effective communication and collaboration within teams, which is crucial in managing the human-AI interface. Emotional Intelligence has enhanced leaders' capacity to motivate their teams and build trust, even when AI technologies introduce uncertainty [37]. This ability to connect on an emotional level is particularly important in AI-driven environments, where human interactions can be overshadowed by technology. Studies by Jahanshahi et al. [38] emphasize that the Dark Triad traits can impede this connection, highlighting the need for positive emotional traits like EI to mitigate potential disruptions caused by AI integration.

4.7.2. Achievement orientation and driving performance

In AI-centric leadership roles, Achievement Orientation enables leaders to focus on goals and motivate teams to achieve higher performance standards. This trait is aligned with entrepreneurial motivation, as Zarnadze et al. [36] noted, where personality traits directly influence business success. Similarly, leaders who demonstrate high Achievement Orientation are better equipped to push the boundaries of innovation and ensure that AI technologies are leveraged to enhance organizational efficiency [39]. Additionally, the entrepreneurial personality traits discussed by Vieira et al. [40] show a clear link between goal-setting and success, which is crucial in AI adoption processes where clear targets are essential for the smooth integration of new technologies.

4.7.3. Analytical thinking and data-driven decision-making

Analytical Thinking is another critical trait that supports data-driven decision-making, a core component of AI leadership. As Stefko et al. [35] note, the ability to analyze data effectively can distinguish successful leaders in AI-enhanced environments. Furthermore, research by Tornillo et al. [41] suggest that personality traits, particularly Analytical Thinking, play a key role in adopting business intelligence systems, which are essential for making informed decisions in AI contexts. Leaders with strong analytical abilities can leverage AI-generated insights to enhance strategic decision-making, thereby driving innovation and organizational growth [42].

4.7.4. Structured leadership and ethical AI implementation

Structured Leadership is essential for ensuring that AI technologies are implemented ethically and sustainably. This trait allows leaders to create frameworks that govern AI's use, mitigating risks such as bias, privacy violations, and ethical dilemmas. Altmeier and Fisch [43] illustrate how structured approaches to leadership, especially in syndication efforts, can create robust systems that enhance organizational success in the AI era. Moreover, leaders who prioritize ethical practices, as explored by Simpong et al. [44, 45] in their study on community-oriented businesses, can ensure that AI technologies are aligned with broader social goals, such as poverty reduction and sustainability.

4.7.5. Sustainability and AI integration

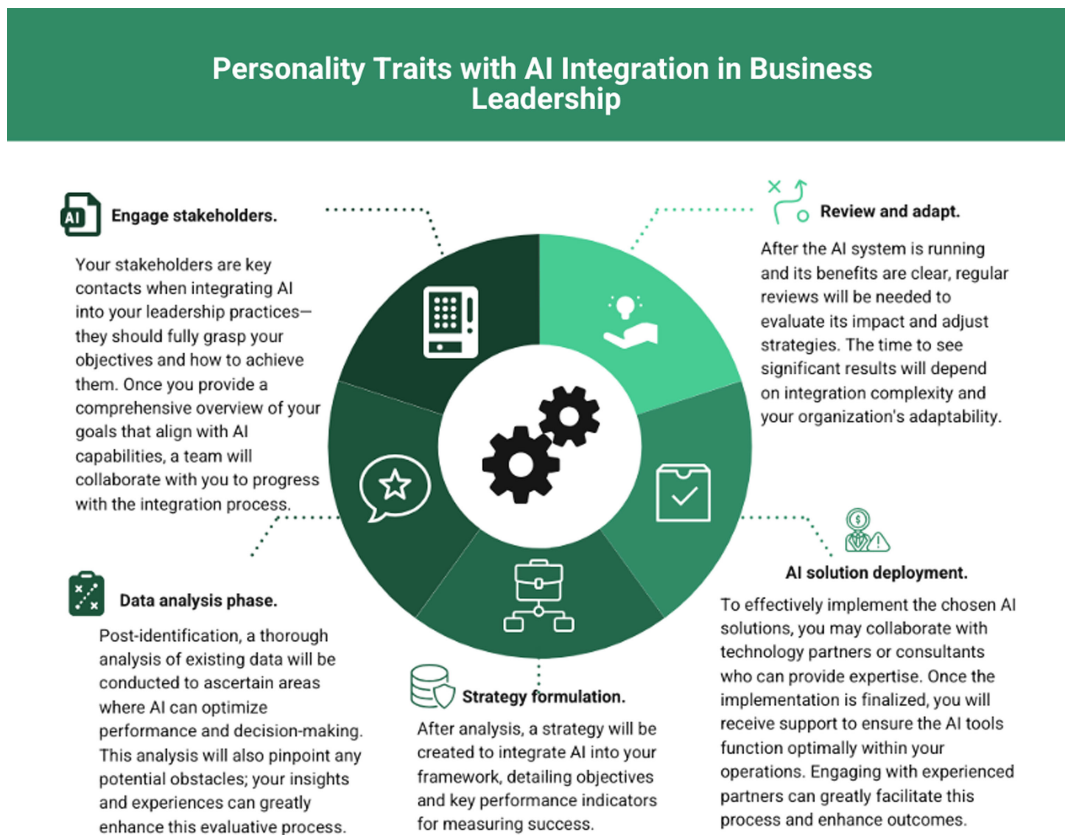
The alignment of personality traits with sustainability initiatives has become a growing concern in AI-driven environments. Barba [46] discusses the role of personality in career choices within international business, noting how personal traits can drive sustainable leadership practices. In the context of AI, leaders who demonstrate high Achievement Orientation and Structured Leadership are better positioned to implement AI technologies in ways that promote long-term sustainability. This is supported by research on entrepreneurial personality traits and sustainable business management [47]. Leaders who are both achievement-oriented and structured are more likely to guide their organizations toward ethical AI use, contributing to the sustainable growth of the business ecosystem [48, 49].

4.7.6. Challenges and opportunities

Despite AI's opportunities, leaders must also address challenges related to personality traits and AI integration. For instance, as Jahanshahi et al. [38] point out, negative traits like the Dark Triad can undermine ethical AI practices, making it crucial for leaders to cultivate positive traits such as EI and Structured Leadership. Additionally, the findings of Liu et al. [11] on the impact of personality traits and social media technology acceptance indicate that leaders need to balance technological adoption with human-centric approaches, ensuring that AI serves to enhance, rather than replace, human interactions in the workplace [43, 50].

The overall findings on the personality traits with AI integration in business leadership from the present study are presented in Figure 3.

Figure 3
Overall findings on the personality traits with AI integration in business leadership from the present study



5. Conclusion

As the AI era advances, integrating key personality traits—Emotional Intelligence, Achievement Orientation, Analytical Thinking, and Structured Leadership—into leadership practices becomes increasingly crucial. These traits complement AI-driven processes and are essential for leveraging AI to enhance organizational effectiveness, foster innovation, and maintain ethical standards. Leaders with high Emotional Intelligence bridge the gap between human needs and AI efficiencies, ensuring AI-driven decisions are socially and emotionally attuned. Achievement-oriented leaders drive the application of AI insights towards ambitious goals, balancing performance with ethical considerations to push the boundaries of innovation.

Furthermore, analytical leaders are vital in navigating AI's vast data ecosystems, ensuring that decisions are well-informed, accurate, and fair, while guarding against biases in AI-generated recommendations. Structured leadership, meanwhile, provides the frameworks necessary for the effective, sustainable, and transparent implementation of AI within business operations. The future of business leadership lies in the ability to harmonize these human traits with AI capabilities, equipping leaders to navigate the complexities of the modern workplace. This integration will drive innovation, promote ethical decision-making, and ensure sustainable growth as industries continue to embrace AI technologies.

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Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Author Contribution Statement

Chee Kong Yap: Conceptualization, Methodology, Validation, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration, Funding acquisition.

Chee Seng Leow: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration, Funding acquisition. **Wing Sum Vincent Leong:** Software, Validation, Formal analysis, Resources, Data curation, Writing – original draft, Visualization, Funding acquisition.

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