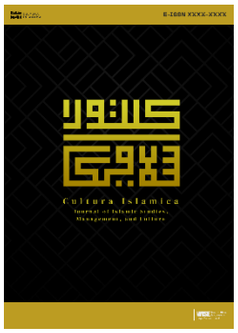

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Research Article

The Utilization of ChatGPT: Its Correlation with Self-Regulated Learning among Students of Islamic Education at UIN Raden Intan Lampung

Risqiya Qurrota A'yun*, Nurul Azizah, Robi Zulfikar, Nadya Ranialini, Akbar Fauzi

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Abstract

This study aims to analyze the relationship between the use of ChatGPT and the self-regulated learning of students in the Islamic Education Department (PAI) at UIN Raden Intan Lampung. In line with technological advancements, ChatGPT, an artificial intelligence-based tool, has increasingly been utilized in various academic activities, including supporting independent learning processes. This research employs a quantitative approach using a correlational method, where data is collected through a questionnaire measuring both the frequency of ChatGPT use and the level of students' self-regulated learning. The sample consists of 33 randomly selected PAI students. Data analysis was conducted using Pearson correlation analysis to determine the relationship between the two variables. The results indicate a significant and positive relationship between the use of ChatGPT and students' self-regulated learning, meaning that the more frequently students use ChatGPT, the higher their level of self-regulated learning. These findings highlight the potential of ChatGPT as an effective tool for enhancing students' self-regulated learning in the digital age and provide recommendations for developing technology-based learning strategies in higher education.

Keywords: ChatGPT; Self-Regulated Learning; PAI Students

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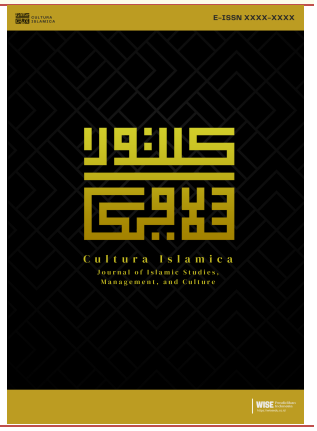

INTRODUCTION

One of the key pillars in national development is education, which is now influenced by the rapid advancements in science and technology in the digital era. These developments play a significant role in daily life, including in the field of education [1], [2]. Education actively nurtures the potential of students to acquire spiritual religious strength, self-discipline, moral values, intelligence, noble character, and abilities that align with their personal needs and the needs of society, facilitating a learning process that enables ongoing educational development. In a simple and general sense, education refers to human efforts to develop both physical and mental potential in accordance with the values embedded in society and culture. Education and culture coexist and support each other [3]. In today's digital era, technology, particularly in education, has become an integral part of daily life, where the development of information and communication technology (ICT) presents new possibilities for improving the quality and effectiveness of the learning process.

Thus, the advancement of educational technology has become crucial for a nation to compete in the era of globalization [4], [5]. Various aspects of society have been transformed by technological advancements, including how teaching and learning are conducted and the classroom environment. Now, students and teachers in Indonesia frequently use smartphones, tablets, and other portable devices [6]. Higher education institutions must equip students with the skills necessary to survive, work, and utilize technology and information [1]. Self-regulated learning is a learning skill possessed by students in the learning process that is driven, controlled, and assessed by the students themselves, allowing them to manage their own learning by activating their cognitive, affective, and behavioral aspects, thereby achieving the desired learning outcomes. Psychologically, an individual is considered independent if they can make decisions on their own in life without relying on others for help.

Generally, independent students have confidence in their abilities and take responsibility for the tasks assigned or entrusted to them. Independence in students is crucial in higher education, marking the shift from teacher-centered learning to student-centered, self-regulated learning. However, this dynamic is influenced by advanced technologies such as ChatGPT [7]. One of the most important competencies in higher education is the ability of students to remain independent throughout the learning process and to complete course assignments [4]. The success of students in higher education is determined by their understanding of the importance of learning. Students who grasp the significance of learning will positively impact their future lives. Self-regulated learning helps students become proactive in preparing class assignments, seeking references in books and research journals, and summarizing what they have learned. In the education system, self-regulated learning is essential for achieving learning objectives, which emphasizes the need for students to actively develop their potential [8].

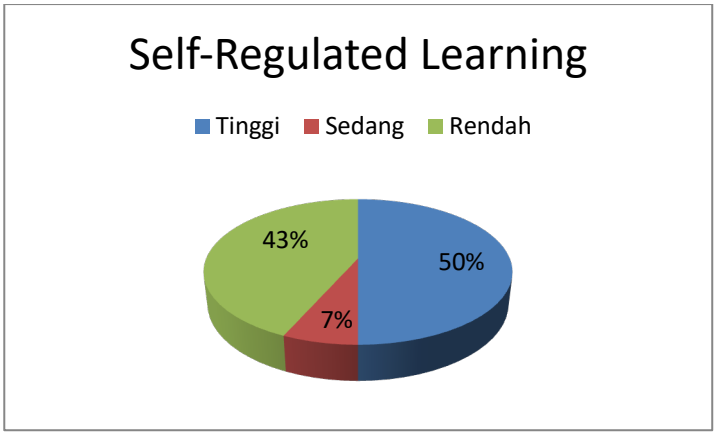

Figure 1. Chart of Pre-Research Questionnaire Results on Self-Regulated Learning

Based on Figure 1, the research conducted on students from Class B and K of the Islamic Education (PAI) program at UIN Raden Intan Lampung, with a total of 30 respondents, presents data visualized in the form of a pie chart illustrating the students' self-regulated learning levels. The data reveals that 50% of the total respondents, equivalent to 15 students, exhibit a high level of self-regulated learning. This indicates that half of the students have effectively developed self-learning abilities, including time management, goal-setting, and self-motivation. Meanwhile, 43%, or 13 students, fall into the category of low self-regulated learning, suggesting significant challenges in developing self-regulated learning in this group. On the other hand, 7%, or 2 students, are categorized as moderate, indicating that while they have a basic foundation in self-regulated learning, there is still room for improvement in certain aspects. This data provides valuable insights for educators and institutions to design teaching strategies that can support the enhancement of students' self-regulated learning, particularly for those in the low and moderate categories.

Artificial Intelligence (AI), designed to mimic human intelligence, is one of the rapidly advancing technologies with various applications that simplify human tasks. One of these is ChatGPT, a chatbot based on the Generative Pre-trained Transformer (GPT) language model developed by OpenAI, which is designed to understand and respond to input in natural language. This technology has brought fundamental changes to the way we learn, interact, and access information, significantly impacting various aspects of life, including teaching and learning activities. In the context of self-regulated learning demands, students also utilize ChatGPT to support their learning process [9], [10], [11], [12]. The advent of AI, including ChatGPT, has had a substantial impact on education by accelerating the learning process, enhancing students' independence, and acting as a personal assistant to help complete assignments [12], [13], [14].

Technological advancements have introduced innovations in education, where learning resources are no longer solely focused on educators but also include tools like ChatGPT. As an AI-based language model developed by OpenAI, ChatGPT can interact naturally, provide informative responses, and perform various tasks such as translation, summarization, and answering specific questions. This technology is gaining increasing attention due to its potential to improve learning quality, learning outcomes, and students' independence, including in the field of Islamic education [15], [16], [17]. OpenAI aims to ensure that ChatGPT, an AI

technology modeling human thinking and behavior in the form of algorithms, can benefit many people by simplifying tasks through its ability to mimic human behavior [18], [19], [20].

In the context of education, students need strong capabilities to understand the concepts of self-regulated learning and effective decision-making. Therefore, the use of ChatGPT as a learning aid tool in this study program holds great potential to enrich students' learning experiences, given ChatGPT's accuracy of 97.5% in completing assigned tasks [21], [22]. ChatGPT has now become a topic of significant interest, particularly among students, as it is considered a solution for completing various academic tasks. This tool is increasingly being utilized by various stakeholders, including students, due to its importance in enhancing teaching and learning in the classroom and supporting self-regulated learning [22], [23], [24]. ChatGPT can be used to meet students' needs in the learning process [25]. As a virtual assistant, ChatGPT offers advantages such as personalized and adaptive learning support, tailored to students' needs and levels of understanding, thereby fostering the experience of self-regulated learning. As an innovation in artificial intelligence (AI), ChatGPT can perform tasks more efficiently than humans [5], [26].

Several studies conducted by Harry Murcahyanto [4], Syamsidar HS and Samsinar S [1], and Heri Nur Cahyanto, Putri Pamungkas, Octo Zulkarnain [7], show that the use of ChatGPT provides considerable benefits for students in improving motivation and comprehension. However, students eventually become dependent on ChatGPT, which hinders their ability to think critically. While previous studies have addressed some of the impacts of using ChatGPT on self-regulated learning, an in-depth exploration of the relationship between ChatGPT use and self-regulated learning is still limited. Moreover, no prior research has examined the connection between ChatGPT usage and self-regulated learning in university students. Therefore, this study aims to investigate the theme: "The Relationship Between ChatGPT Usage and Self-Regulated Learning Among Islamic Education Students at UIN Raden Intan Lampung.

This research offers a novel perspective on the relationship between ChatGPT usage and students' self-regulated learning. The study focuses on the correlation between ChatGPT usage and students' self-regulated learning, particularly in the context of courses within the Islamic Education Department at UIN Raden Intan Lampung. The urgency of this research lies in its correlational approach, examining how the use of ChatGPT directly influences students' self-regulated learning levels. This study differentiates itself from previous studies by concentrating on specific variables within the context of religious education and utilizing statistical analysis methods to measure this relationship. By highlighting the role of ChatGPT as a tool that can enhance students' initiative and responsibility in the learning process, this research provides a new perspective on the integration of technology in education, while also offering practical recommendations for the development of technology-based curricula in religious educational institutions.

As technology continues to evolve, students need to understand how tools like ChatGPT can function as supporting elements in the learning process, enhancing their independence in completing academic tasks. Therefore, in-depth research is required to explore the relationship between ChatGPT usage and self-regulated learning. This study is also relevant for identifying the potential positive and negative impacts of technology usage in education, as well as

developing effective guidelines for integrating technology into curricula to maximize its benefits and reduce dependence on other learning resources.

This research will explore the relationship between ChatGPT usage and self-regulated learning at UIN Raden Intan Lampung. The study aims to deepen the understanding of how ChatGPT usage supports independent learning, helping educators design more effective technology-enhanced strategies. The research also investigates the extent to which AI can support students' learning processes, enabling quick access to information, answers, and references, which may enhance motivation and autonomy. Additionally, this study offers insights for academic institutions on new methods to facilitate learning and contributes to developing technology-driven curricula aligned with the needs of the digital generation. However, to optimize learning outcomes, ChatGPT usage must be paired with teaching strategies that foster students' independence and critical thinking.

METHODS

This research was conducted during the 2024/2025 academic year at UIN Raden Intan Lampung. Based on the type of data and analysis methods used, this study is categorized as a quantitative research. The researcher employed an Ex-post facto design, which is a research design that analyzes variables that have already occurred without any treatment. This approach aims to explore causal relationships related to programs, activities, or events that have already taken place. The causal relationships are based on a theoretical framework indicating that one variable influences or causes a certain outcome in another variable.

The participants in this study are students from the 22nd batch of UIN Raden Intan Lampung, totalling 350 students. This research uses a probability sampling method, specifically simple random sampling. In this study, the researcher applied the Slovin formula with a 10% margin of error to determine the sample size. Based on the calculation, the number of samples chosen as respondents in this study was adjusted to 32 students, representing about 9% of the total student population.

Data collection in this study was conducted using a non-test instrument in the form of a Likert scale questionnaire. The questionnaire consists of a series of statements with response options: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). This non-test instrument was used to measure both the independent and dependent variables in the study. Indicators for measuring ChatGPT usage include: (1) user satisfaction, (2) response speed, (3) errors, and (4) continued use. Meanwhile, indicators for self-regulated learning include: (1) independence, (2) problem-solving, (3) responsibility and initiative, and (4) creativity.

Preliminary tests were conducted, including tests for Normality, Homogeneity, Linearity, and Hypothesis Testing, such as T-test, F-test, and Coefficient of Determination Test, to analyze the relationship between the independent variable (X) and the dependent variable (Y). Data analysis in this study was performed using IBM SPSS Statistics 26, which was chosen due to its practicality and ease of use. The analysis process includes descriptive statistics, data quality testing, classical assumption testing, and hypothesis testing through regression analysis.

RESULTS AND DISCUSSION

Results

This study was conducted at UIN Raden Intan Lampung to explore the relationship between ChatGPT usage and self-regulated learning among students. A questionnaire on ChatGPT usage and self-regulated learning was administered to 32 respondents. Below are the results of the data analysis from the completed questionnaires.

1. Normality Test

   The normality test is used to determine whether the research data follows a normal distribution. The data is considered normal if the significance value is >0.05, indicating that the data follows a normal distribution. Conversely, if the significance value is <0.05, the data does not follow a normal distribution. The results of the prerequisite test for ChatGPT usage and self-regulated learning are displayed in Table 1.

Table 1. Results of Normality Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelompok	Statistic	Df	Sig.	Statistic	df	Sig.
Data	1.00	.115	32	.200*	.945	32	.102
	2.00	.123	32	.200*	.971	32	.525

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the results of the normality test using the Shapiro-Wilk method, as the number of respondents is below 100, the table above shows the details. The results reveal that the Sig. value for the ChatGPT usage variable is 0.102, indicating that the data follows a normal distribution. Meanwhile, the data for the self-regulated learning variable also follows a normal distribution, with a Sig. value of 0.525.

2. Homogeneity Test

   The homogeneity test is used to examine whether the variance of the data distribution is consistent (homogeneous) or not (heterogeneous). The data is considered homogeneous if the Sig. value is > 0.05.

Table 2. Results of Homogeneity Test

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Data	Based on Mean	.905	1	62	.345
	Based on Median	.748	1	62	.390
	Based on Median and with adjusted df	.748	1	61.982	.390
	Based on trimmed mean	.864	1	62	.356

Based on the results in Table 2, the Sig. value for the ChatGPT usage and self-regulated learning variables is 0.345. Since this value (0.345) is greater than 0.05, it can be concluded, based on the homogeneity test criteria, that the variances for the ChatGPT usage and self-regulated learning data are the same, or homogeneous.

3. Linearity Test

   The linearity test is a statistical method used to examine whether the relationship

between two variables (independent and dependent) is linear. Essentially, this test evaluates whether the relationship can be represented by a straight line. Data is considered linear if the significance value is > 0.05. The results of the linearity test for ChatGPT usage and self-regulated learning are shown in Table 3.

Table 3. Results of Linearity Test

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
VariabelY * VariabelX	Between Groups	(Combined)	1889.469	22	85.885	1.201	.406
		Linearity	39.678	1	39.678	.555	.475
		Deviation from Linearity	1849.791	21	88.085	1.232	.389
	Within Groups		643.500	9	71.500		
	Total		2532.969	31			

Based on the significance value (Sig.) from the output, the Deviation from Linearity value is 0.389, which is greater than 0.05. Since the significance value of 0.389 > 0.05, it can be concluded that there is a significant linear relationship between the ChatGPT usage variable (X) and the self-regulated learning variable (Y).

4. T-test

In this hypothesis test, both the T-test and correlation test are performed. The T-test is used to assess whether the independent variable influences the dependent variable, while the correlation test helps determine the relationship between the two variables. The results of the T-test for ChatGPT usage and students' self-regulated learning are presented in Table 4.

Table 4. Results of T-test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	46.424	6.559		7.078	<.001
	VariabelX	-.115	.166	-.125	-.691	.005

a. Dependent Variable: VariabelY

Based on the data in Table 4, the significance value (Sig.) is 0.001, which is less than 0.05. As a result, it can be concluded that H0 is rejected and Ha is accepted, indicating that ChatGPT usage (X) has an effect on self-regulated learning (Y).

5. F-Test

The hypothesis test conducted simultaneously (F-test) is used in regression analysis to assess whether all independent variables, collectively, have a significant effect on the dependent variable. In other words, this test is designed to evaluate whether the regression model can effectively explain the variation in the dependent variable.

Table 5. Results of F-test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.678	1	39.678	.477	.005[b]
	Residual	2493.291	30	83.110		
	Total	2532.969	31			

a. Dependent Variable: VariabelY
b. Predictors: (Constant), VariabelX

Since the significance value (Sig.) is 0.001, which is smaller than 0.05, this indicates that ChatGPT usage has a significant effect on self-regulated learning. This shows that the use of ChatGPT can significantly enhance students' self-regulated learning.

6. Coefficient of Determination Test

The R-Squared test, or coefficient of determination, is a statistical tool used in regression analysis to assess the extent to which the variation in the dependent variable (response variable) can be explained by the independent variable(s) (predictor variable(s)) in the regression model. R-Squared represents the proportion of the variance in the dependent variable that is predictable from the independent variables.

Table 6. Results of Coefficient of Determination Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.125[a]	.016	-.017	9.11645

a. Predictors: (Constant), VariabelX

Based on the SPSS output 'Model Summary' table above, the R square or coefficient of determination value is 0.016. This value is obtained by squaring the correlation coefficient (R), which is 0.125 × 0.125 = 0.016. An R square value of 0.016 means that 1.6% of the variation in the dependent variable, which is self-regulated learning (Y), can be explained by the independent variable, which is ChatGPT usage (X). The remaining 98.4% (100% - 1.6%) is influenced by other factors not included in this regression model or variables not considered in this study.

Discussion

The aim of this study is to explore the relationship between the use of ChatGPT and students' self-regulated learning. This research differs from previous studies conducted by Heri Nur Cahyanto and colleagues [7]. The distinction lies in the type of research; this study delves deeper into the relationship between the two variables involved. Additionally, this study contrasts with the one conducted by Syamsidar HS and colleagues [1], which focuses more on using ChatGPT to enhance self-regulated learning, whereas this study investigates the connection between ChatGPT usage and self-regulated learning. The research by Hary Murcahyanto [4] examined the program of study in the Arts, Drama, Dance, and Music, while this study focuses on the Islamic Education program.

Based on data analysis regarding the variables of ChatGPT usage and self-regulated learning among students in the Islamic Education (PAI) program, this study identifies the use of ChatGPT as a significant contributing factor to positive outcomes. These findings were obtained from the detailed responses provided by respondents through the questionnaires distributed. Through statistical data processing, this research successfully demonstrates that ChatGPT usage significantly impacts students' self-regulated learning in the PAI program at UIN Raden Intan Lampung. Further statistical analysis reveals that ChatGPT usage has a

positive effect on self-regulated learning. The T-test conducted resulted in a significance value of 0.001, which is smaller than 0.05. This indicates a significant relationship between the two variables, i.e., ChatGPT usage and self-regulated learning. These findings emphasize the importance of digital literacy in enhancing students' ability to learn independently.

Additionally, the obtained coefficient of determination (R^2) value of 1.6% indicates that 1.6% of students' self-regulated learning can be explained by ChatGPT usage. This implies that only a small portion of students' self-regulated learning is influenced by ChatGPT usage, while the remainder is influenced by other factors not explored in this study. This finding underscores the important role of ChatGPT in promoting more independent learning among students. The research findings indicate a positive relationship between ChatGPT usage and students' self-regulated learning. These results align with previous studies that found that ChatGPT can help students become more independent in their learning process [1], [4], [7]. Although ChatGPT can assist students in learning independently and understanding materials quickly, there are concerns that over-reliance on this technology may reduce critical thinking skills [27].

Furthermore, the study revealed that several factors affect students' self-regulated learning, one of which is students' motivation to learn. The relationship between students' self-regulated learning and their motivation to learn is positive, meaning the higher the students' motivation, the greater their self-regulated learning ability [28]. In today's digital era, education has undergone a major transformation. The paradigm shift in learning is driven by technological advancements. Artificial intelligence technologies such as ChatGPT have become crucial in supporting higher education. One important aspect of using this technology is its influence on students' independence in completing academic tasks [7].

CONCLUSION

This study aims to analyze the relationship between the use of ChatGPT and the self-regulated learning of students in the Islamic Education (PAI) program at UIN Raden Intan Lampung. The results of the study indicate a significant and positive relationship between ChatGPT usage and the level of students' self-regulated learning. This means that the more frequently students utilize ChatGPT in the learning process, the higher their level of self-regulated learning.

Although the contribution of ChatGPT to self-regulated learning is only 1.6%, this finding still highlights that artificial intelligence technology plays a role in fostering independent learning habits. However, it is important to note that the majority of students' self-regulated learning is still influenced by other factors, such as intrinsic motivation, teaching methods, and academic support. This research advances the field by filling the knowledge gap regarding the impact of ChatGPT usage on students' self-regulated learning in religious education. Unlike previous studies that focus more on the effectiveness of AI in general education, this study specifically addresses the impact of AI on self-regulated learning within the context of Islamic education.

As technology continues to evolve, this research offers practical contributions for educational institutions in developing AI-based learning strategies that still emphasize critical thinking and self-regulated learning. The implications of this study suggest that ChatGPT can be used as a tool to support students' independent learning, but its usage must be balanced with

appropriate academic guidance and supervision to prevent a decline in students' critical thinking skills.

LIMITATIONS

This study has several methodological limitations that should be considered. First, the limited sample size (only 32 respondents) and the use of a correlational method constrain the study's ability to reveal causal relationships between ChatGPT usage and self-regulated learning. Additionally, the data collected through the questionnaire is subjective and prone to perception bias, and only a small fraction of the variation in self-regulated learning (1.6%) can be explained by ChatGPT usage. Therefore, other factors, such as motivation, teaching methods, and academic support, have not been explored in depth.

For future research, it is recommended to expand the sample size and adopt a mixed-methods approach to explore other external and internal factors that influence students' self-regulated learning. Longitudinal studies are also needed to assess the long-term effects of ChatGPT usage on the development of self-regulated learning and critical thinking skills, as well as to explore the differential impact of ChatGPT usage across various disciplines in order to develop more effective technology-based learning strategies.

AUTHORS INFORMATION

Corresponding Author

Risqiya Qurrota A'yun – Department of Islamic Education, Universitas Islam Negeri Raden Intan Lampung, Indonesia;
orcid.org/0009-0005-7835-5500
Email: rqurrotaayun16@gmail.com

Authors

Nurul Azizah – Department of Islamic Education, Universitas Islam Negeri Raden Intan Lampung, Indonesia;
orcid.org/ 0000-0002-5175-8116
Email: nurulazizah23@student.uns.ac.id

Robi Zulfikar – Department of Islamic Education, Universitas Islam Negeri Raden Intan Lampung, Indonesia;
orcid.org/0009-0005-8083-9440
Email: robizulfikar08@gmail.com

Nadya Ranialini – Department of Islamic Education, Universitas Islam Negeri Raden Intan Lampung, Indonesia;
orcid.org/0009-0007-0078-5222
Email: nadyaranialini1806@gmail.com

Akbar Fauzi – Department of Islamic Education, Universitas Islam Negeri Raden Intan Lampung, Indonesia;
orcid.org/ 0009-0005-1963-2280
Email: akbarfau97@gmail.com

AUTHOR CONTRIBUTION

VS, RZ, NR, and AF as co-researchers, collaboratively designed, conducted, and analyzed the research, including data collection through interviews, observations, and documentation. They were also responsible for drafting and revising the methodology, results, and discussion sections of the manuscript. NA, as the supervising lecturer, provided technical and conceptual guidance throughout the research process, including assisting in the formulation of the research design, offering direction in data analysis, and reviewing the final manuscript. All authors contributed to the writing and finalization of the manuscript and have approved the final version submitted.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

I affirm that Artificial Intelligence (AI) tools were utilized in the creation and formulation of this academic work. These tools were primarily applied to improve language accuracy, correct grammar, and offer suggestions for organizing the content. Every piece of AI-generated content was carefully reviewed and edited to ensure its alignment with the research objectives and compliance with academic standards.

I acknowledge that the AI tools were used as supplementary resources, and the final work represents my own intellectual contributions, reflecting my understanding, research, and analysis. Any involvement of AI in content generation or idea formulation has been explicitly cited and recognized, adhering to principles of academic integrity. This statement confirms that the use of AI in this research fully complies with the values of transparency, academic honesty, and ethical writing.

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