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DEVOTION

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Implementation of the STEAM Learning Method on Critical Thinking Skills in Early Childhood

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KEYWORDS	ABSTRACT
implementation, learning, thinking, early childhood	The objective of this study is to analyze and describe the application of the STEAM learning method in fostering critical thinking skills in early childhood education. This type of research is qualitative research with the aim of analyzing the implementation of the STEAM learning method on thinking abilities in early childhood. This research is needed so that educators can implement the STEAM learning method for the thinking abilities of young children. The subjects in this research were 10 students of Kindergarten B RA Bina Insani Al-Ma'ruf in Nglaban hamlet, Maron village, Banyakan district. This research uses observation data collection, in-depth interviews, and documentation. This research resulted that the implementation of STEAM learning at RA Bina Insani Al-Ma'ruf was carried out in every children's play activity. This learning involves several aspects of child development that are integrated and fun for children. In STEAM learning activities, the teacher acts as a facilitator and motivator according to the plans that have been prepared. This learning involves several aspects of child development that are integrated and fun for children. In STEAM learning activities, the teacher acts as a facilitator and motivator according to the plans that have been prepared. Basically, the implementation of STEAM learning at RA Bina Insani Al-Ma'ruf has principles based on attitudes, skills and knowledge.

INTRODUCTION

Early Childhood Education is a level of education before basic education which is a coaching effort aimed at children from birth to the age of six. Through early childhood education, children can foster, grow and develop all their potentials optimally so that basic behaviors and abilities are formed according to their developmental stages. Based on Law Number 20 of 2003 concerning the National Education System Chapter I, Article I, Point 14, which states that: "Early Childhood Education is a coaching effort aimed at children from birth to the age of 6 years which is carried out through the provision of educational stimuli to help physical and spiritual growth and development so that children have readiness to enter further education (Daulae, 2019; Hsiao & Su, 2021).

Good early childhood education is education that can optimize all aspects of children's development and growth and is able to provide children to face the 21st century. One of the 21st century skill development can be achieved through education. There are four competencies in the 21st century known as the "4Cs", namely (1) Critical Thinking, (2) Communication, (3) Collaboration, and (4) Creativity and Innovation. Critical thinking skills are part of a child's

cognitive ability, cognitive ability is one of the abilities that must be possessed by every child and must develop according to their age level (Karataş & Arpacı, 2021; Maksum et al., 2021).

Critical thinking skills in early childhood can be improved through effective learning approaches such as the STEAM learning method. The STEAM learning method is a learning that integrates science, technology, engineering, art, and mathematics which aims to enable children to think critically and be able to solve problems creatively. According to Chintya (2021), the application of the STEAM learning method needs to be carried out early in PAUD because PAUD is a form of education that focuses on laying the foundation (MZ & Syafi'i, 2021; Nurpratiwiningsih & Setiyoko, 2018).

Critical thinking skills include cognitive abilities which include problem-solving skills, symbolic and logical thinking. The application of the STEAM method can improve critical thinking skills in early childhood in solving a problem. This research focuses on the implementation of the STEAM learning method on critical thinking skills in early childhood. The purpose of this study itself is to describe the application of critical thinking skills in children aged 5-6 years at RA Bina Insani Al-Ma'ruf.

Early childhood has the potential to develop the basics of critical thinking skills. This potential can be realized if children get learning stimulation in the PAUD unit. The STEAM learning method integrates various things, makes connections or interconnections, builds and strengthens networks in the brain, so that it can build higher order thinking skills (HOTS), because in reality, in life, various disciplines, events, are interrelated (Degeng, 2021; Twiningsih & Elisanti, 2021).

The application of STEAM learning in early childhood is part of learning innovations in order to face the current revolutionary era. The STEAM method combines five fields of science in one activity, namely science, technology, engineering, arts, and mathematics. The STEAM learning method is an integrated learning approach that aims to expand children's mindset about problems that exist in the real world. According to Yakman (2018), the concept of STEAM linkage is carried out through integrative thematic learning that uses a game-based curriculum.

The application of the STEAM learning method aims to enable children to absorb and deepen the lessons given at school. Learning the STEAM method has five components, namely: science, technology, engineering, arts, and mathematics. By using these five components, children can be encouraged to explore, solve problems, and make projects and children can have critical thinking skills. The first component in STEAM is science. In this component, the child tries to learn how the world works by doing several steps called the scientific method. With scientific methods, children can make observations, make experiments, make predictions, and discuss (Nurtanto & Sofyan, 2015).

The second component in STEAM is technology. In the technology component is the equipment that children use to play. With technology, children can see cause and effect to solve a problem. The third component in STEAM is engineering. The implementation of this component is needed so that children can understand how and why something works. This activity can start by identifying the problem first and then trying to solve the problem.

The fourth component in STEAM is art. Art elements are used as a means for children to innovate and solve problems creatively. According to Wahyunungsih (2020), children's skills for art-related experiences are influenced by the level of children's development. Conceptually, art education in schools is directed at the acquisition of learning outcomes that have aspects of knowledge, skills, exploration of the mind, and creativity in children. The fifth component in STEAM is mathematics. Early childhood learns early mathematical concepts such as geometry and spatial relationships as they explore new objects with their hands and mouths.

Introducing the STEAM learning method in early childhood can provide opportunities for children to expand their knowledge and develop thinking skills. According to Hastuti (2017), critical thinking is the development of various patterns that help children to gain a deep

understanding so that they can explore their world. Critical thinking skills help children to recognize various problems and how to identify and be able to solve these problems. The concept of critical thinking includes remembering, understanding, applying, analyzing, evaluating, and creating. The manifestation of the application of the STEAM learning method to critical thinking skills is that when the teacher gives a question to the student, the child is encouraged to think because he is challenged to find the answer to the question.

Previous studies have demonstrated the effectiveness of STEAM (Science, Technology, Engineering, Arts, and Mathematics) education in enhancing critical thinking skills among students. For instance, Twiningsih and Elisanti (2021) highlighted that STEAM-based learning media significantly improved both critical thinking abilities and science literacy in early childhood education. Similarly, Rasmani et al. (2020) found that the STEAM method positively impacts classification skills in young learners. However, while these studies emphasize the broader benefits of STEAM, there remains a limited focus on its specific implementation in early childhood settings, particularly in integrating critical thinking skills within daily activities.

In the context of the 21st century, critical thinking has become an essential skill for future readiness. Early childhood is a crucial period for cognitive development, where foundational skills such as critical thinking can be nurtured. However, there is a pressing need to adopt innovative and integrative learning methods like STEAM to meet the developmental and educational demands of this era. The lack of critical thinking skills in early education curricula highlights the urgency of this research to bridge the gap between traditional learning approaches and modern educational needs.

Despite the growing popularity of STEAM education, there is a scarcity of research focusing on its direct application in early childhood education to foster critical thinking skills. Existing studies often emphasize STEAM's impact on older students or its potential benefits broadly. Specific insights into how STEAM can be systematically integrated into daily play-based learning activities for early childhood development are underexplored, creating a significant gap in the literature.

This study introduces a novel perspective by investigating the direct implementation of the STEAM learning method in enhancing critical thinking skills among early childhood learners. By focusing on a specific age group (5-6 years) and exploring the practical application of STEAM principles in a play-based educational setting, the research provides unique insights into aligning developmental theories with modern pedagogical practices.

The objective of this study is to analyze and describe the application of the STEAM learning method in fostering critical thinking skills in early childhood education. Through an in-depth exploration of the implementation process, the research aims to provide a comprehensive understanding of how STEAM can be effectively utilized in early learning environments.

This research contributes to both theory and practice by offering educators actionable strategies for implementing STEAM-based learning in early childhood education. It equips teachers with a framework for fostering critical thinking through integrative activities that engage multiple developmental domains. Additionally, it enriches the academic discourse on early childhood pedagogy by emphasizing innovative learning approaches.

The findings of this study underscore the potential of STEAM education to prepare young learners for future challenges by developing their critical thinking skills early on. The research highlights the importance of integrating interdisciplinary approaches in early education, setting the foundation for lifelong learning and adaptability. Moreover, the study provides policymakers and educators with evidence-based recommendations to reform early childhood curricula, ensuring they align with the demands of the 21st-century educational landscape.

RESEARCH METHOD

The method used in this study is a descriptive qualitative research method. According to (Creswell, 2015) qualitative research is a type of research that explores and understands meaning in a number of individuals or groups of people who come from social problems. Descriptive qualitative research aims to describe, describe, explain, explain, and answer in detail the problems to be studied. The subjects in this study are students of Kindergarten B RA Bina Insani Al-Ma'ruf in Nglaban hamlet, Maron village, Banyakan district with a total of 10 people. This study uses types of observational data collection, in-depth interviews, and documentation.

According to (Sugiyono, 2018), the qualitative research instrument is the researcher himself. This shows that a researcher becomes a tool to record information during the course of the research. Researchers immediately go into the field to find and collect the data needed for research.

RESULTS AND DISCUSSION

The implementation of STEAM learning at RA Bina Insani Al-Ma'ruf is carried out in every children's play activity. This learning involves several aspects of child development that are integrated and fun for children. In STEAM learning activities, teachers act as facilitators and motivators in accordance with the plans that have been prepared. In the use of STEAM learning, teachers have the skills to create a good, interesting atmosphere and the ability to observe the development of children's skills.

In STEAM learning, students are free to pour their ideas into carrying out the learning process. STEAM learning encourages children to construct knowledge about the world around them through observation activities, active questioning, and inquiry (Rachmah et al., 2022, p.3). Children's involvement in STEAM learning can motivate children to improve their critical thinking skills. The goal of STEAM learning is to prepare children to be able to face the milestones of secondary knowledge and 21st century work skills. This is because STEAM learning can help prepare the next generation to face the development of the times. The STEAM learning curriculum involves four skills, namely: creativity, collaboration, communication, and critical thinking. These four skills help children to be able to see problems from a broader and deeper perspective so that they can make the right decisions.

Basically, the application of STEAM learning at RA Bina Insani Al-Ma'ruf has principles based on attitudes, skills and knowledge. The application of STEAM learning has the following steps: 1) Observation step, children carry out observation activities of various phenomena or issues in the environment that are related to science concepts according to the material studied, 2) find ideas, in this step the child thinks of new ideas to be developed, 3) innovate, children can outline what needs to be implemented so that the idea can be applied, 4) Creation steps, children can provide suggestions and opinions from the results of discussions with the group about the ideas applied, 5) get social values, ideas generated by children can provide benefits for social life.

CONCLUSION

The application of STEAM learning in early childhood is part of learning innovations in order to face the current revolutionary era. The STEAM method combines five fields of science in one activity, namely science, technology, engineering, arts, and mathematics. The implementation of STEAM learning at RA Bina Insani Al-Ma'ruf is carried out in every children's play activity. Basically, the application of STEAM learning has principles based on attitudes, skills and knowledge.

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The Influence of Social Media, Search Engines, Mobile Ads and Online Display Ads on Brand Awareness of Voucher X Products

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KEYWORDS	ABSTRACT
digital marketing, brand awareness, social media, search engine, mobile advertising	This study comprehensively examines the impact of digital marketing strategies on increasing brand awareness of product X vouchers in Indonesia. Employing a quantitative approach and regression analysis, this research reveals that social media and search engines play a highly significant role in enhancing brand visibility and recall among consumers. These findings indicate that marketing efforts focused on social media platforms and search engine optimization (SEO) have successfully reached a broader audience and fostered higher levels of engagement. Conversely, mobile advertising, despite its significant potential, has not demonstrated a significant impact in the context of this study. The results of this research offer crucial implications for marketing practitioners, highlighting the importance of allocating greater resources to marketing activities on social media and search engines, as well as reevaluating mobile advertising strategies to ensure the relevance and effectiveness of advertising messages. Overall, this study contributes valuable insights to a deeper understanding of the dynamics of digital marketing within the evolving Indonesian market.

INTRODUCTION

In today's digital age, digital marketing has become a key strategy used by companies around the world to reach consumers. Digital marketing allows companies to leverage internet technology and digital devices to promote their products and services. Based on data from Statista (2023), global spending on digital marketing is expected to reach more than $450 billion by 2024, with the majority of companies allocating significant budgets for digital advertising on platforms such as Google, Facebook, and Instagram. This trend shows a significant increase year over year, indicating the importance of digital marketing in global business strategies.
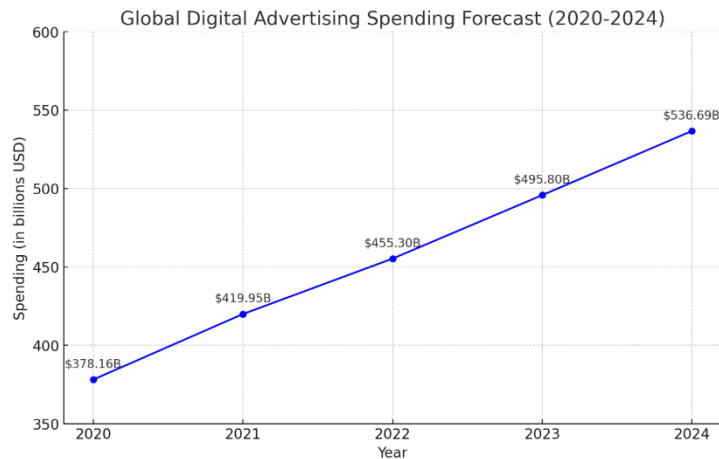
Figure 1 Digital Marketing Expenditure Statistics Graph (Global)
Source : Statista (2023)

Indonesia, as one of the countries with the largest number of internet users in the world, is experiencing rapid growth in the use of digital platforms and social media. According to the Indonesian Internet Service Providers Association (APJII), internet penetration in Indonesia reached 78.19% in 2023, with more than 215 million active internet users. This growth is driven by improved technology accessibility and digital infrastructure. E-commerce platforms such as Tokopedia, Shopee, and Blibli.com are the main places for consumers to shop online, while social media such as Instagram, TikTok, and YouTube are effective promotional channels for many brands (Jara & Putra, 2021; Lestari & Nur Azizah, 2023).
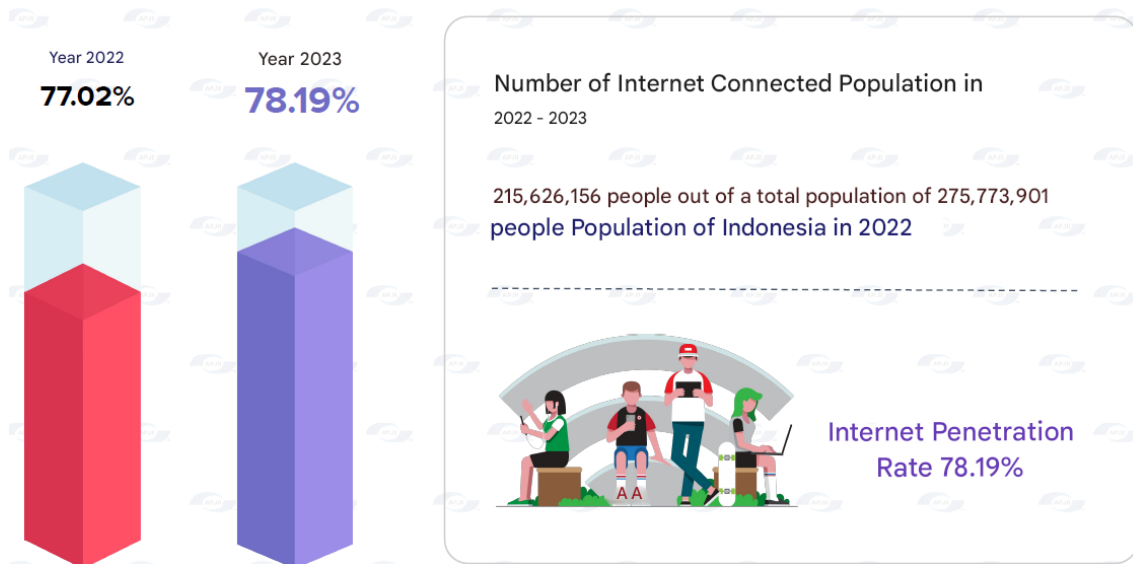
Figure 2 Statistics on the Number of People Connected to the Internet, Source: APJII (2023)

With the facts conveyed are very seen as one of the supporting factors in running a business, there are several companies that take advantage of it. One of them is the X Voucher Product which uses a marketing strategy that utilizes the main e-commerce platforms in Indonesia such as Tokopedia, Shopee, and Blibli.com for their sales and distribution places. In addition, product promotion is carried out through popular social media such as Instagram, TikTok, and YouTube (Febriyan & Supriono, 2018; Wijaya, 2021). Despite using various digital marketing channels, Voucher X products still face challenges in increasing brand awareness in the Indonesian market. The results of the marketing strategy that has been implemented do not meet the expected sales expectations, which shows that there are obstacles in the effectiveness of the use of the venue and the promotion in building brand awareness.

According to (Krisnawati, 2016) "brand awareness is the ability and ability of a potential consumer to be able to recognize part of a brand or recall a brand". A company or business actor can be said to be successful in building brand awareness when consumers are able to recognize their trademark, consider the brand, and build trust in the trademarked product. The dimensions of brand awareness according to (Kotler & Keller, 2016), are:

a. Brand recognition, which is the ability of consumers to recognize brands in certain categories.
b. Brand recall, which is the ability of consumers to remember the brand.
c. Purchase, which is how deeply consumers make a certain brand as an option in deciding to buy.
d. Consumption, namely how deeply consumers remember the brand when consumers use other products that are competitors' products.

The increasing use of digital marketing has driven companies to innovate in reaching consumers more effectively and efficiently. However, the success of a digital marketing strategy does not solely depend on the use of technology but also on how well a company understands consumer behavior and leverages data to optimize marketing campaigns. In Indonesia, the intense competition on e-commerce platforms and social media creates unique challenges for businesses to differentiate themselves and capture consumer attention (Kelvin et al., 2024; Manshur, 2020).

Brand awareness plays a crucial role in the effectiveness of digital marketing. For businesses like X Voucher Product, achieving strong brand awareness can significantly impact the success of their marketing strategy. Despite utilizing popular platforms such as Tokopedia, Shopee, and Blibli.com, along with social media channels like Instagram, TikTok, and YouTube, the company continues to face challenges in making its brand recognizable and memorable among consumers (AGUSTINI, 2022; Mubarok et al., 2022).

The main issue lies in the ability to communicate the brand's value and distinctiveness consistently. In a highly competitive digital marketplace, consumers are exposed to numerous advertisements daily. This makes it essential for brands to adopt creative and targeted marketing approaches to stand out and resonate with their target audience. The lack of substantial results from X Voucher Product's current strategy highlights the need for an in-depth review and improvement of its promotional efforts (Lutfiani et al., 2020; Miskiya, 2023; Oktaviani & Rustandi, 2018).

Previous studies have consistently demonstrated the significant role of digital marketing strategies in influencing brand awareness across various industries. For instance, research by Febriyan and Supriono (2018) highlights how social media marketing has effectively enhanced brand recognition and consumer engagement. Similarly, Kelvin et al. (2024) emphasized the impact of integrated digital marketing strategies on brand visibility, particularly through platforms such as social media and search engines. However, while many studies explore the general effects of digital marketing, specific investigations into the influence of mobile ads and online display ads on brand awareness, particularly in the voucher industry within Indonesia, remain scarce.

The rapid growth of digital platforms and Indonesia's high internet penetration rates necessitate a deeper understanding of how businesses can effectively utilize digital marketing channels. Despite the widespread adoption of social media, search engines, and mobile advertising, the challenges faced by companies like Voucher X in achieving brand awareness highlight the urgency of evaluating and optimizing these strategies in a highly competitive digital landscape.

While prior research has largely focused on the effectiveness of social media and search engine marketing, there is limited evidence regarding the comparative influence of mobile advertising and online display ads on brand awareness. Additionally, specific insights into how

these strategies interact within the unique context of the Indonesian market for voucher products are underexplored, leaving a critical gap in the literature.

This study contributes a novel perspective by examining the combined and individual impacts of four digital marketing strategies—social media, search engines, mobile advertising, and online display ads—on brand awareness within the voucher product industry in Indonesia. By leveraging quantitative data and regression analysis, this research provides a comprehensive evaluation of these strategies' effectiveness in addressing the specific challenges faced by Voucher X.

The primary aim of this study is to analyze the influence of social media, search engines, mobile advertising, and online display ads on the brand awareness of Voucher X products in Indonesia. This analysis seeks to identify the most effective strategies and provide actionable insights for optimizing digital marketing efforts.

The findings of this research are beneficial for marketing practitioners and businesses, offering strategic recommendations for improving brand awareness through targeted digital marketing. Additionally, the study provides a framework for leveraging data-driven insights to enhance engagement and visibility in a competitive digital marketplace.

This research emphasizes the need for a strategic and data-driven approach to digital marketing, particularly in the context of increasing brand awareness for voucher products. The results underscore the importance of prioritizing social media and search engine optimization while reevaluating the role of mobile advertising in achieving marketing objectives. These implications extend to improving resource allocation, campaign effectiveness, and overall marketing efficiency, thereby contributing to the broader field of digital marketing strategy development.

This study focuses on identifying the key factors that contribute to the challenges faced by X Voucher Product in increasing brand awareness. It also aims to propose strategic recommendations to improve the effectiveness of their digital marketing efforts and strengthen their position in the Indonesian market (Muhaimin, 2022). Through this analysis, the research seeks to provide valuable insights for optimizing brand visibility and consumer engagement.

This study aims to evaluate the influence of social media, search engines, mobile advestising, and online display advertising that have been applied to the brand awareness of Voucher X products in Indonesia. Through in-depth analysis, it is hoped that a more optimal strategy can be found to achieve the desired marketing goals. Several previous studies have examined the impact of digital marketing on brand awareness in various industries, but research specific to voucher products in Indonesia is still limited.

Based on the background of the above problems, the author decided to take the title "The influence of social media, search engines, mobile ads and online display ads on brand awareness of voucher X products". This study aims to analyze the influence of social media, search engines, mobile ads and online display ads on brand awareness of Voucher X products in Indonesia. This research is expected to provide various benefits, both theoretically and practically, that are relevant to the problems faced by the Voucher X product in an effort to increase brand awareness in Indonesia.

RESEARCH METHOD

This study will use a type of quantitative data, within the scope of this research includes data related to problems in brand awareness and sales of Voucher X and the quantitative data used in this study is an overview of digital marketing for brand awareness of Voucher X products obtained from the results of the questionnaire distribution.

The population of this study includes Voucher X users which includes B2B and B2C consumers, followers of Voucher X social media accounts and the general public who have not used Voucher X.

Sampling with a sampling technique that does not provide an equal opportunity for each element or member of the population to be selected as a sample is called Nonprobability. This sample technique includes systematic sampling, quota, axial, purposive, saturated, and snowball (Sugiyono, 2017). The data collection method used in this study, questionnaires, is a snowball method in which questionnaires are distributed to a network of researchers who are expected to forward the questionnaire to other parties until the target number of samples is met.

RESULTS AND DISCUSSION

Classical Assumption Test

In conducting multiple linear regression analysis, there are several assumption tests that need to be carried out (Classical assumptions) which include: normality test of residuals, heteroscedasticity test, and multicollinearity test.

Normality Test

The normality test was carried out through regression calculation using the SPSS version 25 program through 2 graph approaches, namely histogram graph analysis and P-Plot normal graph analysis which compared between two observations with distributions that were close to the normal distribution. The following is an explanation of the graphs.

Histogram Chart

Histogram
Dependent Variable: REGR factor score Brand Awareness

Mean = -4.08E-17
Std. Dev. = 0.991
N = 219
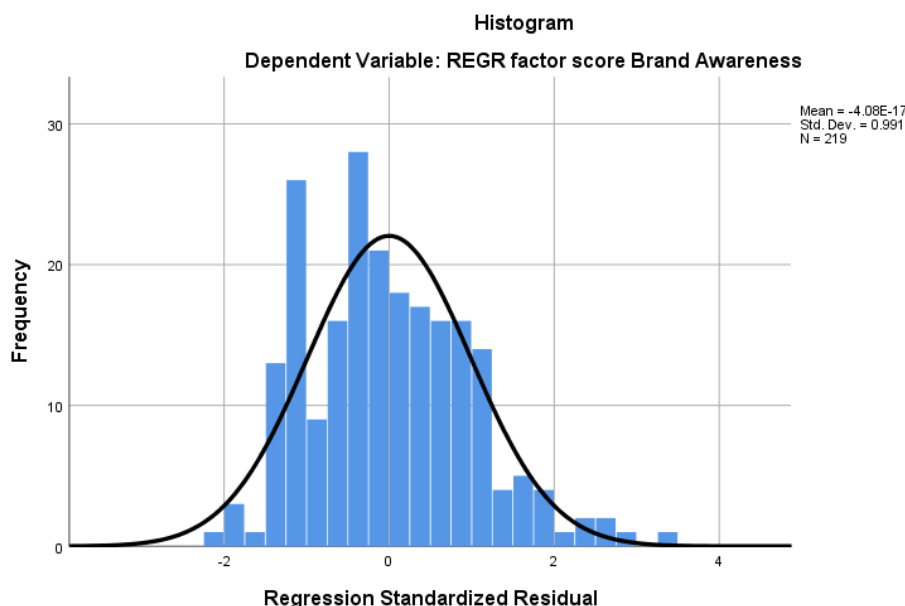
Figure 3 Regression Histrogram Graph Image

The histogram graph above is the result of a normality test conducted using SPSS version 25 on 219 respondents. This graph depicts the distribution of the normalized standard residuals, which is the difference between the actual value of the dependent variable and the value predicted by the regression model.

Based on the results of the normality test shown by the histogram chart above, it can be concluded that the residual data from the regression model is normally distributed. The fulfillment of this normality assumption is one of the important requirements in regression analysis, because this will affect the validity and reliability of the analysis results

Normal P-Plot Chart

P-P plot graphs (probability plots) are used to evaluate whether the data is normally distributed. In this graph, the data points representing the cumulative distribution of observations are plotted against the expected normal cumulative distribution. If the data is normally distributed, then the data points will tend to follow a straight diagonal line.

From the plot P-P graph displayed from the SPSS results, it can be seen that most of the data points follow the diagonal line quite well. This indicates that the residual data from the regression model tends to be normally distributed. Although there are some data points that deviate slightly from the diagonal line, overall the data distribution pattern shows a conformity with the normal distribution.

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: REGR factor score Brand Awareness
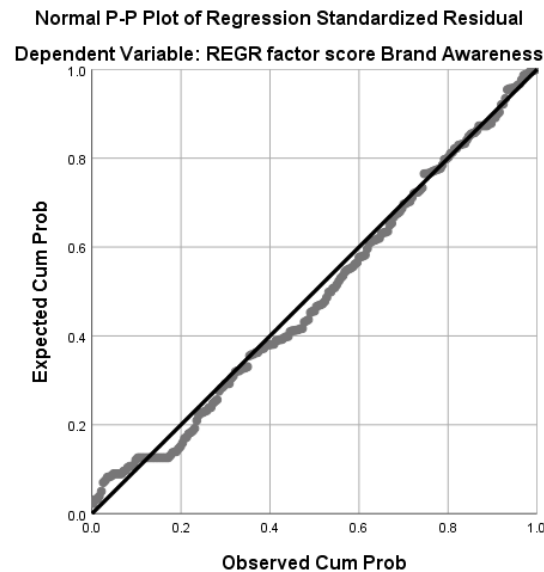
Figure 4 P-Plot Regression Graph Image

Based on the results of the normality test shown by the P-P graph of the plot above, it can be concluded that the residual data from this regression model meets the assumption of normality. The fulfillment of this normality assumption is one of the important requirements in regression analysis, because this will affect the validity and reliability of the analysis results.

Multicollinearity Test

The SPSS coefficient table is shown to present important information regarding the regression model of this study, including the results of the multicollinearity test. The main indicator to assess the existence of multicollinearity is the VIF (Variance Inflation Factor) value.

The VIF value in the table shows the variance inflation rate caused by the correlation between independent variables. The higher the VIF score, the greater the level of multicollinearity. The commonly used threshold value is 10. If the VIF value of a variable is more than 10, then the variable is considered to have a serious multicollinearity problem.

In addition to the value of VIF, tolerance value is also an important indicator for testing multicollinearity. The value of tolerance is actually the opposite of the value of VIF (1/VIF). A low tolerance value (close to 0) indicates the presence of high multicollinearity, while a high tolerance value (close to 1) indicates the absence of multicollinearity.

Table 1 Table of Multicolignity Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.232E-17	.051		.000	1.000	-.100	.100					
	REGR factor score Sosial Media	.267	.074	.267	3.593	.000	.120	.413	.590	.239	.183	.468	2.138
	REGR factor score Search Engine	.256	.068	.256	3.753	.000	.122	.391	.568	.248	.191	.553	1.809
	REGR factor score Mobile Ads	.082	.072	.082	1.138	.256	-.060	.225	.491	.078	.058	.494	2.025
	REGR factor score Online Ads	.179	.085	.179	2.114	.036	.012	.346	.582	.143	.107	.359	2.785

a. Dependent Variable: REGR factor score Brand Awareness

All VIF values in the table above are below 10. This suggests that there are no serious multicollinearity issues with your regression model. In other words, the independent variables in this model do not have a very high correlation with each other, so they will not interfere with the estimation of the regression coefficient.

The tolerance value of all independent variables was not below 0.01. This is an excellent indication that there are no serious multicollinearity problems in this regression model. That is, each independent variable makes a unique contribution in explaining the variation of dependent variables, and this regression model is quite stable.

Both the VIF value and the tolerance value provide consistent information, i.e. the absence of significant multicollinearity problems in this regression model.

Heteroscedasticity Test

The scatterplot below illustrates the relationship between the normalized residual (Y-axis) and the normalized predicted value (X-axis) in this regression model. This graph is used to detect the presence of heteroscedasticity, which is a condition in which the variance of the residual is not constant for all observations. (Y axis = SRESID Plots, X-Axis = ZPRED Plots)
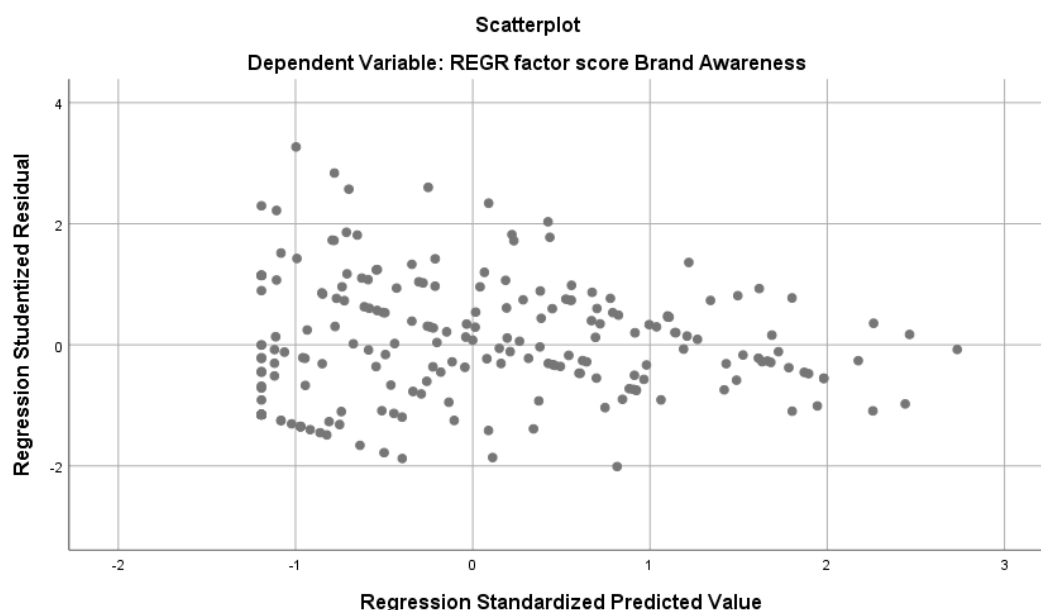
Figure 5 Residual Scatterplot Graphite

Heteroscedasticity analysis through residual scatterplots shows the presence of interesting patterns. In general, the data points are scattered quite randomly around the horizontal line zero. However, there is a tendency that as the prediction value increases, the residual distribution tends to get tighter. This indicates the possibility of heteroscedasticity, where the residual variance gets smaller as the prediction value increases.

However, this pattern is not very clear and there are still quite a few data points scattered randomly. Given the objectives of the research and other assumptions that have been met, this research will continue with the assumption of homoscedasticity. Thus, the assumption of homoscedasticity in this regression model can be considered fulfilled. These results strengthen the validity of the regression model that has been built.

Multiple Linear Regression Analysis

After building a multiple linear regression model and performing a series of classical assumption tests and hypothesis tests, the next step is to analyze the resulting regression coefficients. This coefficient analysis aims to test the significance of the influence of each independent variable on the dependent variable, as well as measure the strength and direction

of the relationship between these variables. Thus, we can understand the relative contribution of each independent variable in explaining the variation of the dependent variable.

Multiple Linear Regression Coefficient Analysis
Through this analysis, we can identify which independent variables have the most influence on the dependent variables, here are the results of the multiple linear regression coefficient analysis:

Table 2 Multiple Linear Regression Coefficients Table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.232E-17	.051		.000	1.000	-.100	.100					
	REGR factor score Sosial Media	.267	.074	.267	3.593	.000	.120	.413	.590	.239	.183	.468	2.138
	REGR factor score Search Engine	.256	.068	.256	3.753	.000	.122	.391	.568	.248	.191	.553	1.809
	REGR factor score Mobile Ads	.082	.072	.082	1.138	.256	-.060	.225	.491	.078	.058	.494	2.025
	REGR factor score Online Ads	.179	.085	.179	2.114	.036	.012	.346	.582	.143	.107	.359	2.785

a. Dependent Variable: REGR factor score Brand Awareness

Based on the results of the multiple regression analysis shown in the table, we can conclude that the independent variables of Social Media (X1), Search Engine (X2), and Online Advertising (X4) have a significant influence on increasing Brand Awareness (Y1). This is indicated by a calculated t-value that is greater than the t-value of the table (which is assumed to be significant at the level of 5%) and a significance value (Sig.) that is less than 0.05.

Social Media (X1) has a positive and significant regression coefficient, which indicates that increased activity on social media positively contributes to increased brand awareness. The higher the activity on social media, the more likely it is that the brand will be recognized by consumers.

Search Engine (X2) also shows a positive and significant influence on Brand Awareness. This indicates that good search engine optimization can increase brand visibility in search results, thereby increasing brand awareness among consumers who are looking for information related to the products or services offered.

Online Display Advertising (X4) also makes a significant contribution to increasing Brand Awareness. This shows that an effective online advertising campaign can reach a wider target audience and increase overall brand awareness.

On the other hand, Mobile Advertising (X3) did not show a significant influence on Brand Awareness. The t-value of this variable is smaller than the t-value of the table and the significance value is greater than 0.05. This indicates that the mobile advertising campaign conducted in this study has not had a significant impact on increasing brand awareness.

Based on the results of multiple regression analysis, it can be concluded that digital marketing strategies such as Social Media, Search Engines, and Online Display Advertising have an important role in increasing Brand Awareness. Companies need to continuously work on increasing their presence on social media, optimizing their websites for search engines, and running relevant online advertising campaigns to achieve the goal of increasing brand awareness. Meanwhile, the effectiveness of mobile ad campaigns needs to be further evaluated in future research.

Determination Coefficient Analysis
Once it is known that the variables Social Media (X1), Search Engine (X2), and Online Display Advertising (X4) have a significant influence on Brand Awareness (Y1), the next step is to measure how well this regression model explains the variation in Brand Awareness. The analysis of the determination coefficient will show the proportion of Brand Awareness variation that can be explained by the three independent variables. Thus, we can find out the

extent to which the regression model that has been built can be used to predict the level of Brand Awareness.

The coefficient of determination, which is often notated with R-Squared, is a statistic that shows the proportion of variance of dependent variables that can be explained by independent variables in the regression model. The value of the determination coefficient ranges from 0 to 1. The higher the value R-squared, the better the model is at explaining data variations.

Table 3 Summary Model Table

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.669[a]	.448	.437	.75011596	.448	43.359	4	214	.000	1.885

a. Predictors: (Constant), REGR factor score Online Ads, REGR factor score Search Engine, REGR factor score Mobile Ads, REGR factor score Sosial Media

b. Dependent Variable: REGR factor score Brand Awareness

The results of the determination coefficient analysis show that the regression model developed is able to explain 44.8% of the variability in Brand Awareness (Y1). The R-squared value of 44.8% indicates that the independent variables included in the model, namely Social Media (X1), Search Engine (X2), Mobile Display Advertising (X3) and Online Advertising (X4) together make a significant contribution in explaining the level of customer satisfaction. However, there is still about 55.2% of the unexplained variability of this model. This indicates that there may be other factors to consider to improve the model's predictive capabilities.

Hypothesis Test

To test the significance of the regression model and the influence of independent variables on dependent variables, a hypothesis test was carried out. The F test will be used to test the null hypothesis that together independent variables have no effect on dependent variables. If the significance value of the F test is less than the predetermined significance level (0.05), then the null hypothesis is rejected and it can be concluded that overall the independent variable has a significant influence on the dependent variable. Furthermore, a t-test will be carried out to test the influence of each independent variable partially. The t-test will show whether each independent variable makes a significant contribution in explaining the variation of the dependent variable.

Test F

To test whether the regression model that has been built is statistically significant, the F test is carried out. The results of the F test will show whether the developed regression model can explain the variation in the dependent variable significantly.

Table 4. Summary Model Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.588	4	24.397	43.359	.000[b]
	Residual	120.412	214	.563		
	Total	218.000	218			

a. Dependent Variable: REGR factor score Brand Awareness

b. Predictors: (Constant), REGR factor score Online Ads, REGR factor score Search Engine, REGR factor score Mobile Ads, REGR factor score Sosial Media

The results of the F test showed that the significance value of 0.000 was smaller than the significance level of 0.05. This means that we can reject the null hypothesis (H0) and

conclude that overall the regression model constructed is significant. In other words, the independent variables (X1, X2, X3, X4) together make a significant contribution in explaining the variation of the dependent variable (Y1). These findings indicate that the regression model that has been developed can be used to predict the value of dependent variables based on the values of independent variables.

Test T

To test the significance of the influence of each independent variable (X1, X2, X3, and X4) on the dependent variable (Y1), a t-test was performed. The t-test aims to test the null hypothesis that the regression coefficient of each independent variable is equal to zero. Using a significance level of 5%, and the value of df $= 219 - 4 - 1 = 214$, the t-value of the table was obtained of 1,971. If the calculated t-value is greater than 1,971, then the independent variable is considered statistically significant.

Table 5. Test T Coefficient Table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.232E-17	.051		.000	1.000
	REGR factor score Sosial Media	.267	.074	.267	3.593	.000
	REGR factor score Search Engine	.256	.068	.256	3.753	.000
	REGR factor score Mobile Ads	.082	.072	.082	1.138	.256
	REGR factor score Online Ads	.179	.085	.179	2.114	.036

a. Dependent Variable: REGR factor score Brand Awareness

The results of regression analysis show that variables X1, X2, and X4 have a significant influence on the dependent variable Y1, while variable X3 has no significant influence. This can be inferred from the calculated t-value of each variable compared to the t-value of the table of 1,971. Thus, it can be said that changes in variables X1, X2, and X4 will have a significant impact on changes in Y1, while changes in variables X3 will not have a significant impact.

CONCLUSION

Based on a series of data analyses and testing, it can be concluded that digital marketing strategies involving social media, search engines, and online advertising significantly influence brand awareness. The multiple linear regression analysis results indicate that various digital marketing strategies have distinct impacts on brand awareness. Social media activities show a positive and significant impact, suggesting that increased engagement on these platforms enhances brand recognition. Similarly, search engine visibility also has a significant positive effect, making it easier for consumers to discover product information. Online advertising further contributes to brand awareness by effectively reaching a broader audience. However, mobile advertising did not demonstrate a significant impact on brand awareness in this study, potentially due to lower campaign effectiveness. While this study aligns with prior research affirming the role of digital marketing in building brand awareness, differences in the influence of mobile advertising may stem from product characteristics, target audiences, or differing campaign strategies. Overall, this study highlights that implementing effective digital marketing strategies through social media, search engines, and online advertising is crucial for enhancing brand awareness, and companies are encouraged to continually innovate and assess their marketing approaches to meet the demands of the digital era.

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Ensuring Equality Before the Law and Personal Data Protection through Implementation of AI Integration in Single Identification Number Systems: A Positivism Philosophy Perspective

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KEYWORDS	ABSTRACT
artificial intelligence, equality, data protection, single identification number	The implementation of Artificial Intelligence (AI) in managing single identification number systems, such as Indonesia's National Identity Number, must balance constitutional principles and human rights. AI can enhance administrative efficiency and data security, but it must align with the principle of equality before the law, as stipulated in Articles 27 and 29 of the 1945 Constitution. Ensuring data privacy and preventing discrimination in data processing are essential to avoid regional and social inequality. This study aims to examine how AI-based solutions impact the principles of equality before the law and personal data protection, as well as analyse these issues from the perspective of positivist philosophy, which emphasizes strict legal compliance and effective supervision. Using a normative juridical method with statutory and analytical approaches, this research evaluates existing regulations and explores the interplay between legal structure and AI governance. The findings reveal that while AI can promote efficiency and consistency, its algorithms may also introduce bias, risking unfair outcomes in identification services. A robust regulatory framework and continuous oversight are necessary to address potential inequalities and misuse. From a positivist view, strict rule enforcement and transparent governance are essential to balance technological innovation with the protection of individual rights. [Conclusion] In conclusion, the integration of AI into single identification systems must comply with constitutional and legal principles to uphold equality before the law and protect personal data. Effective legal oversight and accountability are essential to maintain fairness, prevent discrimination, and ensure that AI systems benefit all citizens equitably.

INTRODUCTION

The integration of Artificial Intelligence (AI) in public administration, particularly in systems like single identification numbers (e.g., Indonesia's National Identity Number), represents a significant advancement in modern governance. AI offers immense potential to streamline administrative processes, improve service delivery, enhance data security, and minimize human errors. However, the adoption of AI in these systems must be carefully aligned with constitutional principles and fundamental human rights. The principle of equality before the law, enshrined in Articles 27 and 29 of the 1945 Constitution of Indonesia, ensures that all citizens are treated equally by the state without discrimination (Amelia, 2023). AI-driven systems must respect these legal obligations, ensuring that every individual's right to privacy and personal data protection is upheld.

Single identification number systems are used by governments worldwide to centralize citizens' data and improve administrative efficiency. These systems allow the state to provide public services, track personal records, and enforce legal compliance (Heath, 2019). However, with large amounts of personal data stored in such databases, the risks related to privacy breaches, unauthorized access, and discriminatory practices increase. AI algorithms, when applied to manage and analyse this data, can create new challenges by unintentionally perpetuating bias, violating individual rights, or leading to unequal access to services. Ensuring that the use of AI aligns with the principles of fairness, equality, and privacy protection is crucial to maintaining trust in these systems. Study in 2022 examines the anticipated fiscal impact stemming from the integration of NIK as NPWP, projecting an upsurge in the number of individual employee taxpayers over five consecutive years following the policy implementation (Ardin, 2022).

The legal framework surrounding AI adoption must also address the potential for discrimination. While AI can automate processes and enhance consistency, its algorithms are often influenced by the data they are trained on. In countries with socio-economic disparities, unregulated AI systems may reproduce and even amplify these inequalities. For example, biased algorithms could lead to unequal access to healthcare, education, or financial services, disproportionately affecting certain groups based on geographic, economic, or demographic factors. Such outcomes would contradict the principle of equality before the law and undermine the legitimacy of public administration. Therefore, proper oversight and regulation are essential to ensure that the use of AI aligns with legal standards, especially in contexts involving personal identification (Huang, 2018).

From a human rights perspective, the use of single identification numbers must also prioritize data protection and privacy. With personal data becoming increasingly valuable, the misuse of such information poses significant risks. Citizens are entitled to control how their personal data is collected, stored, and shared, in accordance with international human rights principles and Indonesia's Human Rights Law. The application of AI must safeguard individual privacy while ensuring that data is processed transparently and fairly (Jöhnk et al., 2021). When personal data is inadequately protected, it can lead to identity theft, fraud, and discrimination, compromising citizens' trust in public institutions.

A positivist philosophical approach provides a useful framework for understanding the legal implications of AI adoption in identification systems. Positivism emphasizes the importance of strict rule-based governance, where laws and regulations are applied consistently without subjective interpretations. In the context of AI, positivism supports the need for clear legal standards and structured oversight mechanisms to regulate the design, development, and implementation of algorithms (Bullock, 2019). This approach helps ensure that AI systems remain impartial and aligned with the principles of fairness and equality, particularly in their application across diverse populations.

However, positivism also raises important questions about balancing legal compliance with human rights. While strict rules are necessary to prevent the misuse of AI, rigid frameworks can sometimes overlook the nuances of individual cases, especially when dealing with marginalized communities. For example, regions with limited technological infrastructure may struggle to implement AI-based identification systems effectively, resulting in unequal access to services. Therefore, policymakers must carefully design AI governance frameworks to accommodate these variations while upholding the principle of equality before the law.

In Indonesia, the adoption of AI in the public sector is still in its early stages, but the potential impact is already evident. The government's efforts to develop a digital identity system using AI reflect its commitment to modernizing public administration. However, these efforts must be accompanied by comprehensive regulations that address potential risks, such as algorithmic bias and data misuse. Policies governing AI adoption must align with Articles

27 and 29 of the 1945 Constitution and other relevant legal frameworks to ensure that all citizens benefit equally from these innovations.

Another critical aspect is accountability. As AI systems become more complex, determining responsibility for errors or discriminatory outcomes becomes increasingly challenging. It is essential to establish mechanisms for accountability to ensure that both developers and public institutions are held responsible for the outcomes of AI systems. Without accountability, the misuse of AI can go unchecked, undermining public trust and exacerbating inequalities. Furthermore, transparency in the use of AI is essential for building trust with citizens. Public institutions must provide clear information about how AI systems operate, what data they collect, and how decisions are made to ensure that individuals can understand and challenge outcomes if necessary.

The integration of AI into single identification number systems offers numerous benefits, but it also presents challenges that must be carefully addressed. The principle of equality before the law, as well as the right to privacy and personal data protection, must guide the adoption of AI in public administration. A balanced approach that combines technological innovation with legal oversight is necessary to ensure that AI serves as a tool for justice and fairness, rather than a source of inequality and discrimination. The positivist philosophy provides valuable insights into the importance of clear legal frameworks and structured governance, but policymakers must also consider the practical realities of diverse populations to ensure that all citizens benefit equally from AI-driven systems.

Previous studies have emphasized the transformative role of Artificial Intelligence (AI) in enhancing administrative efficiency and data security. For instance, Saragih et al. (2023) explored AI's potential in modernizing tax administration systems, highlighting its effectiveness in data integration and fraud detection. Similarly, Huang (2018) discussed the benefits and risks associated with AI-driven systems, particularly regarding bias and privacy concerns. However, despite the growing body of research, limited attention has been paid to the intersection of AI, equality before the law, and personal data protection within the specific context of single identification number systems in Indonesia.

The adoption of AI in single identification systems is critical as Indonesia accelerates its digital transformation agenda. Ensuring equality before the law and robust data protection mechanisms in these systems is essential to maintain public trust and prevent inequalities. With personal data increasingly at risk of misuse in digital platforms, immediate action is required to establish clear legal frameworks and oversight mechanisms to protect citizens' rights and ensure fair access to public services.

While global research has highlighted the potential of AI in public administration, studies focusing on its application in single identification systems in Indonesia remain scarce. Existing literature often overlooks the challenges of implementing AI in diverse socio-economic contexts, particularly in regions with varying levels of technological infrastructure and access. This gap underscores the need for localized research that addresses the specific challenges of integrating AI with single identification number systems in a way that aligns with constitutional principles and human rights.

This study offers a novel perspective by analyzing the implications of AI integration in single identification systems through the lens of positivist philosophy. It uniquely combines legal, technological, and philosophical frameworks to evaluate how AI systems can be designed and governed to uphold equality before the law and protect personal data in Indonesia. By focusing on the Indonesian context, the research provides insights that are both locally relevant and globally significant.

The primary objective of this study is to examine the impact of AI-based single identification number systems on the principles of equality before the law and personal data

protection. It seeks to analyze existing legal frameworks, identify potential risks, and propose regulatory measures to ensure that AI systems operate fairly and transparently.

This research provides policymakers, legal practitioners, and technologists with a comprehensive framework for integrating AI into single identification systems. It highlights strategies to mitigate risks such as algorithmic bias and data misuse while promoting transparency and accountability. The findings offer actionable recommendations for enhancing public trust and optimizing AI's role in public administration.

The implications of this study extend to both policy and practice. On a policy level, it emphasizes the need for robust legal oversight and structured governance to regulate AI-driven systems. Practically, it provides a blueprint for implementing AI in a way that promotes fairness, prevents discrimination, and strengthens data protection. The study also contributes to the global discourse on ethical AI use, setting a precedent for other countries navigating similar challenges in their digital governance initiatives.

RESEARCH METHOD

This study employs a normative juridical method rooted in positivist philosophy, focusing on the analysis of laws, regulations, and legal principles relevant to the integration of the Single Identification Number (SIN) system in Indonesia (Mertokusumo, 2019). The normative juridical approach examines the legal framework governing the use of the *Nomor Induk Kependudukan* (NIK) as both a civil and tax identifier, with reference to PMK No. 112/PMK.03/2022, the Personal Data Protection Law (Law No. 27 of 2022), and the 1945 Constitution. This method involves a statutory approach, analysing legal texts to identify the alignment between existing regulations and the principles of equality, privacy, and data security (Marzuki, 2019). Consistent with positivist philosophy, the study emphasizes the objective and codified nature of legal norms, focusing on how written laws are applied uniformly to maintain fairness and accountability (Batubara, 2017). Positivism provides a framework for understanding the rule-based operation of the SIN system, guiding the analysis of its effectiveness in achieving transparency, equality before the law, and legal compliance without subjective interpretation (Rhida, 2017).

RESULTS AND DISCUSSION

Implementation of Single Identification Number in Indonesia

The transformation of Indonesia's Taxpayer Identification Number (NPWP) into the *Nomor Induk Kependudukan* (NIK), now referred to as the Single Identification Number (SIN), marks a significant milestone in the country's digital governance strategy. This shift is part of the government's broader initiative to implement a unified identity system, which aims to integrate various data sources and streamline public services under one unique identifier for each citizen. The SIN serves as a comprehensive, multipurpose identity that links diverse types of personal data, such as civil registration, healthcare records, tax information, banking activities, and social services. By reducing or eliminating this perception gap, Directorate General of Taxes can optimize the use of NIK as an identity for tax administration to strengthen the database used for potential exploration and tax monitoring. This integration policy will enable the Directorate General of Taxes to optimize tax revenue collection by centralizing all Taxpayer transactions conducted using NIK (Muan Ridhani Panjaitan, 2022). In accordance with the expectations expressed by Taxpayers, this policy is expected to increase the tax ratio in Indonesia. Implementing SIN developed with digital technology will improve services for Taxpayers and improve the performance of tax compliance monitoring (Aribowo et al., 2022). Using a single identity number can help streamline the population database system, ensure the integrity and accuracy of population data, and integrate all financial and non-financial data (Nur & Widodo, 2022).

The SIN system in Indonesia, which integrates the NIK as both a civil and taxpayer identifier, aligns with the principles of positivist philosophy in public administration. Positivism emphasizes the application of clear legal rules and objective standards to ensure order, fairness, and equality in society. In the context of the SIN, positivism underscores the need for strict compliance with laws and regulations governing identity management, personal data protection, and public service delivery. At its core, positivism views law as a system of codified rules that must be applied uniformly, leaving little room for subjective interpretation or discretion. The transition from NPWP to NIK under PMK No. 112/PMK.03/2022 exemplifies this approach by mandating that every resident uses a single identifier across all public and private sectors. By integrating various personal data sources into a unified identity system, the SIN ensures that legal requirements are applied consistently and that individuals are treated equally under the law.

The 1945 Constitution provides the legal foundation for this integration, with Article 27(1) requiring equal treatment before the law and Article 28G(1) ensuring the protection of personal data. The Personal Data Protection Law further supports the positivist framework by regulating how data should be processed, limiting its use to lawful purposes, and emphasizing data accuracy and security. In line with positivism, the legal framework establishes clear guidelines for public institutions to follow, ensuring that the collection, use, and protection of personal data remain transparent and accountable.

Kurniasih explain that with SIN, one person can use only one type of identity until he dies because NIK on the identity card can be used as the basis for all data. The data in question can be financial or non-financial data, such as personal information, family data, property ownership, and others (Kurniasih et al., 2021). NIK is a unique identifier assigned to every Indonesian citizen and foreigner residing in Indonesia. The primary purpose of the NIK is to serve as a centralized means of identification, facilitating access to public services and ensuring administrative efficiency. The number plays a crucial role across various sectors, including healthcare, education, banking, and tax administration. With the increasing adoption of AI technologies, the SIN is now integrated into more automated systems, such as public service portals and tax databases, to streamline processes and minimize human errors. However, as AI systems rely heavily on personal data, the protection of citizens' privacy and prevention of discrimination become essential.

One of the most recent developments is the integration of NIK with the tax system. The issuance of PMK No. 112/PMK.03/2022 mandates that residents use their NIK as their Taxpayer Identification Number (NPWP), marking a significant shift toward unified data management. This integration is aimed at reducing administrative complexities, ensuring better data synchronization between government agencies, and promoting transparency. Policy of integrating NIK and NPWP could yield even greater results when accompanied by complementary policies, such as offering tax incentives to Taxpayers with incomes below the income taxpayers below the threshold, with the financial burden borne by the state (Said Basalamah & Irawan, 2023). The urgency of equalizing perceptions is important because stakeholders' perceptions and expectations will determine their satisfaction level with the service they receive (Huda & Subagiyo, 2015). Integrating the NIK and NPWP into SIN is a pivotal step in enhancing tax administration and regulations while bolstering the tax revenue base (Mufidah, 2022). This policy can support the efficiency of tax administration and make it easier for them because they only need to memorize one identity number (Tobing & Kusmono, 2022).

The Indonesian government hopes to eliminate data redundancies, reduce administrative burdens, and foster seamless inter-agency cooperation by adopting the SIN concept. With a single number NIK serving as both civil identification and taxpayer identification, the SIN embodies efficiency, accuracy, and transparency in personal data management. However, as

the SIN system increasingly relies on digital technologies and AI, it also introduces new challenges, such as privacy risks, algorithmic bias, and data security concerns. The challenges associated with employing NIK for NPWP purposes such as duplicate and fragmented databases, as well as the limited capacity of the existing blueprint to handle large volumes of data (Darono, 2020).

Legal Basis of the Single Identification Number in Indonesia. The SIN's integration into public systems must comply with several legal frameworks that regulate personal data use and public administration:

1945 Constitution of Indonesia. The 1945 Constitution of Indonesia lays the foundation for equality and privacy rights. Article 27(1) guarantees equality before the law, ensuring that all citizens have equal access to public services. Meanwhile, Article 28G(1) emphasizes the right to privacy and personal protection, mandating that the SIN system must safeguard citizens' personal data.

Human Rights Law (Law No. 39 of 1999). The Human Rights Law (Law No. 39 of 1999) strengthens these constitutional rights. Article 3(2) reiterates the principle of equal treatment under the law, prohibiting discrimination in public services. Article 5 ensures that individuals' personal integrity is protected, which is crucial for the ethical use of personal data linked to the SIN.

Personal Data Protection Law (Law No. 27 of 2022). the Personal Data Protection Law (Law No. 27 of 2022) provides comprehensive regulations for managing personal information. This law requires that data be collected for specific, lawful purposes (purpose limitation) and that only the necessary amount of data is collected (data minimization). Institutions must also maintain transparency and obtain consent when processing personal data. These legal requirements guide the development and use of AI systems that rely on SIN data.

PMK No. 112/PMK.03/2022. The transformation from NPWP to NIK under the SIN framework is regulated by PMK No. 112/PMK.03/2022, aligning tax administration with the government's "One Data Policy" (*Satu Data Indonesia*). The implementation of PMK No. 112/PMK.03/2022 further integrates the SIN with tax administration. Article 2 (1a) states that, starting July 14, 2022, Indonesian residents must use their SIN as their NPWP. This regulation aims to create a unified data management system, allowing the Directorate General of Taxes to synchronize taxpayer data with the Ministry of Home Affairs' population database, as outlined in Article 3 (2). the data reconciliation process involves matching NIK records from the Directorate General of Population and Civil Registration (Dukcapil) with the tax database managed by the Directorate General of Taxes. This integration ensures consistency in citizen data across multiple platforms and minimizes discrepancies that could lead to administrative errors. Article 5 emphasizes that only valid SINs, confirmed through the reconciliation process, can be activated as NPWPs for tax purposes. This helps reduce administrative errors and ensures that each individual is uniquely identified across government services.

Benefits of the SIN System. The SIN system offers several significant benefits, transforming public administration in multiple ways:

Elimination of Data Redundancies. Previously, individuals had to manage multiple identification numbers for different purposes—NPWP for tax, NIK for civil services, and other identifiers for banking and insurance. With the adoption of the SIN, citizens only need one unique identifier for all administrative processes, simplifying bureaucratic procedures.

Improved Data Accuracy and Synchronization. By integrating civil and tax data, the SIN ensures that government records are consistent across agencies. This synchronization reduces the likelihood of duplicate or conflicting information, improving service delivery and preventing errors in tax collection or social benefit distribution.

Enhanced Administrative Efficiency. The use of NIK as the SIN simplifies processes such as tax registration, subsidy distribution, and healthcare access. Citizens no longer need to

register separately with multiple agencies, as the SIN serves as a one-stop identifier across platforms. AI-driven systems further enhance this efficiency by automating data retrieval and verification processes.

Fraud Prevention and Improved Security. The centralized SIN system, combined with AI algorithms, helps detect fraudulent activities more effectively. For example, in tax administration, the use of SIN allows authorities to identify inconsistencies between reported income and expenditures more easily. Security concerns associated with integrated data within SIN, emphasizing the importance of employing secure systems to protect citizens' personal information while simultaneously increasing transparency in information management (Fathiyana et al., 2022). Similarly, in social programs, AI systems can flag duplicate benefit claims, ensuring fair resource distribution.

Transparency and Trust in Government Services. The SIN system promotes transparency by making citizens' interactions with government services more straightforward and traceable. With all personal data linked to a single identifier, individuals can more easily monitor their records, transactions, and benefits, fostering greater trust in public institutions.

SIN System and the Implementation of Human Credit Scores

One emerging concept related to the SIN system is the implementation of credit scoring for individuals, which could significantly enhance transparency in financial transactions and public services. A human credit score system evaluates an individual's financial trustworthiness, typically based on loan history, payment behaviour, and other personal data. Countries like the United States, China, and Australia have advanced credit scoring systems, which serve as essential tools not only for financial institutions but also for employment, housing, and public services. However, Indonesia currently lacks a comprehensive and reliable system to distinguish between trustworthy individuals or businesses and those involved in fraudulent activities. The absence of such a system poses challenges, especially for entrepreneurs, as legitimate and deceptive businesses often appear indistinguishable, complicating trust-building efforts.

The credit score system in the United States, evaluates an individual's financial behaviour based on historical data from credit cards, loans, and other financial instruments. This score determines eligibility for loans, mortgages, and even job applications. Similarly, Australia employs a transparent credit reporting system that helps lenders assess borrowers' financial risk, ensuring responsible lending. On the other hand, China has implemented a more comprehensive social credit system, which not only evaluates financial behaviour but also considers personal actions, social interactions, and compliance with laws, influencing access to services and societal privileges.

The contrast with Indonesia is striking, as the SIN system does not yet provide transparency in distinguishing between responsible and fraudulent actors. Currently, the lack of individual credit scores makes it difficult to assess the trustworthiness of entrepreneurs or businesses, hindering fair economic opportunities. This gap in data leaves both private enterprises and the government vulnerable to risks, as reliable information about individuals or businesses is not readily available, unlike in other countries where a credit score reflects trustworthiness.

The adoption of a credit scoring system from the perspective of positivist philosophy in Indonesia would align with the principles of rule-based governance and objective standards. Positivism emphasizes that laws and regulations should be clear, consistent, and universally applied, ensuring that individuals and businesses are assessed based on standardized, measurable criteria. A credit score system that integrates SIN data would promote objectivity by using codified financial behaviour as a basis for decision-making, rather than subjective judgments. This approach would help reduce bias in lending and business transactions,

ensuring fairer outcomes in line with legal equality as mandated by Article 27(1) of the 1945 Constitution.

The government's focus on infrastructure development must be accompanied by the development of human infrastructure—including financial accountability and transparency. A reliable credit scoring system would ensure that only credible actors benefit from loans, subsidies, and public services. By building trust through data-driven assessments, the government can foster a more stable economy, encouraging responsible entrepreneurship and attracting investments. This would also reduce fraudulent activities by creating accountability mechanisms within the economic system, as AI-powered credit scoring systems could identify risky behaviour or financial mismanagement.

Positivism also demands continuous oversight to prevent misuse of data and discrimination. In countries like China, the social credit system has been criticized for infringing on privacy and controlling individual behaviour beyond financial matters. Therefore, the Personal Data Protection Law in Indonesia must ensure that a future credit score system respects individuals' privacy while promoting fairness. Regular audits of the credit scoring algorithms are essential to prevent biases, and public participation in governance can ensure the system serves the common good.

Challenges of Implementing the SIN System. Despite its benefits, the implementation of the SIN system and its potential integration with a human credit score also presents several challenges, particularly concerning privacy, data management, and the risk of exclusion:

Privacy Concerns and Data Overreach. The SIN centralizes vast amounts of personal data, including civil records, tax data, health information, and banking transactions. Although the Personal Data Protection Law ensures that personal data is protected, the aggregation of such information increases the risk of privacy violations and unauthorized access. Public institutions must implement end-to-end encryption and other advanced security measures to mitigate these risks.

Algorithmic Bias and Exclusion Risks. AI systems managing SIN data must be carefully designed to avoid perpetuating biases in service delivery. For example, if AI models used in tax or healthcare services prioritize certain demographic groups over others, they could unintentionally exclude vulnerable populations. Regular audits and algorithmic fairness assessments are essential to ensure that the SIN system operates equitably and upholds the principle of equality before the law, as mandated by Article 27(1) of the Constitution.

Data Synchronization and Accuracy Issues. The success of the SIN system depends on the accuracy of data across multiple platforms. In cases where citizens' NIK records do not align with tax or banking data, individuals may experience delays or difficulties in accessing services. Continuous data validation and reconciliation processes, as required by PMK No. 112/PMK.03/2022, are necessary to maintain the integrity of the SIN system.

Technological Infrastructure and Regional Disparities. The effective implementation of SIN depends on the availability of reliable technological infrastructure across the country. Regions with limited internet access or outdated systems may struggle to integrate their databases with the central SIN platform, potentially resulting in service disparities. Addressing these regional gaps is essential to ensure that all citizens benefit equally from the SIN system.

Accountability and Governance Issues. With multiple agencies relying on SIN data, clear accountability frameworks are needed to prevent governance issues. It must be clearly defined which institutions are responsible for managing data, addressing errors, and resolving disputes. Additionally, public institutions must ensure transparency in how citizens' data is used, fostering trust in the SIN system.

Accountability mechanisms in a positivist framework, are essential to ensure that all participants in the SIN system—developers, administrators, and policymakers—adhere to codified laws and regulations. The PMK No. 112/PMK.03/2022 mandates that the Directorate

General of Taxes reconcile NIK data with population records to maintain data accuracy and prevent errors. Such processes reflect positivism's emphasis on systematic oversight and structured governance.

Transparency is also a key principle in positivist governance. Citizens must have access to information about how their personal data is used and the ability to challenge any inaccuracies or unfair outcomes. By promoting clear procedures and accountability, the SIN system builds public trust and ensures that both the government and private institutions remain accountable for their actions.

AI Integration in Single Identification Number Systems

The integration of AI in single identification number systems demonstrates significant potential to improve the efficiency and security of public administration (Saragih et al., 2023). The utilisation of AI in single identification number systems can be one of the efforts in national development. National development is not only related to tangible things but also includes things that cannot be seen tangibly because it covers all aspects of the lives of Indonesian people (Amelia & Budi, 2022). AI helps streamline processes, enabling governments to manage large-scale data more effectively, reduce duplication of records, and minimize human error. In the scope of government, the stakeholders' theory shows a relationship between the government and many interest groups that influence each other regarding the decisions made (Farid, 2020). The application of AI in such systems introduces challenges, particularly concerning equality before the law, privacy protection, and the risk of discrimination.

AI systems can handle the complexity of global financial transactions and diverse corporate structures. This adaptability is crucial in addressing the challenges posed by multinational corporations and intricate financial networks (Johnson & Wang, 2019). The use of AI-driven systems in public administration significantly impacts personal data protection, which is an essential part of human rights (Ristianto, 2019). AI can ensure better security through advanced encryption and monitoring, making it harder for unauthorized parties to access sensitive data. Nonetheless, the study identifies that AI systems, if poorly managed, may perpetuate biases embedded in the data used for training algorithms. This can lead to unintended discriminatory practices, violating the principle of equality before the law. For example, biased algorithms may misidentify certain demographics or regions, resulting in unequal access to services like healthcare, education, and financial aid.

Additionally, lack of robust legal frameworks governing AI use in single identification systems can create inconsistencies in policy enforcement. To assess the readiness for implementing "One Data Policy", a comprehensive framework is essential to identify organizational weaknesses and devise action plans for mitigation (Falahah et al., 2021). Without clear regulations, public institutions may apply AI-based solutions in ways that differ across regions, leading to disparities in service delivery. The positivist approach emphasizes the need for clear, enforceable rules and accountability mechanisms to ensure fairness and prevent the misuse of personal data. Strategies for addressing these challenges, involving strengthening regulations, fostering collaboration among relevant agencies, enhancing human resource capacity, and expediting the development of digital infrastructure (Maulidya & Rozikin, 2022).

The principle of equality before the law requires that every citizen, regardless of social status, region, or ethnicity, has equal access to public services and protection under the law. However, AI algorithms can inadvertently reproduce existing societal biases (Karnouskos, 2022). This problem arises because AI models rely on historical data, which may reflect inequalities in areas such as income levels, education, or healthcare access. For instance, if the training data reflects regional disparities, AI systems might continue to prioritize individuals from more developed areas while underrepresenting citizens from marginalized regions.

One of the key challenges is ensuring that AI systems used in public administration align with the principle of equality. If left unregulated, AI-driven systems might deepen existing inequalities by favouring certain groups over others. A prime example is the risk of algorithmic discrimination in biometric identification processes, where facial recognition technology may perform less accurately on people with darker skin tones. Such discrepancies can result in wrongful identification or exclusion from essential services, which contradicts the constitutional promise of equality before the law.

To address these issues, governments need to develop comprehensive policies that guide the use of AI in single identification systems. These policies should require that algorithms undergo regular audits to identify and correct potential biases. Directorate General of Taxes should be able to adapt to Taxpayers as stakeholders because of their strong influence in implementing the policies that Directorate General of Taxes made (Zain et al., 2021). Additionally, it is essential to establish clear guidelines for how personal data should be collected, processed, and stored to prevent privacy violations. Adopting these measures can help ensure that AI systems operate transparently and fairly, thereby safeguarding citizens' rights.

From a positivist philosophical perspective, strict adherence to legal rules and regulations is necessary to prevent the misuse of AI technologies. Positivism emphasizes the importance of rule-based governance and objective application of the law. In the context of AI, this approach calls for structured oversight mechanisms to monitor how algorithms function and how decisions are made. Public institutions must be held accountable for ensuring that AI systems adhere to legal standards and do not compromise individual rights.

However, while positivism provides a strong foundation for regulatory compliance, it also has limitations. Strict adherence to rules may not always capture the complexities of individual cases, particularly in a diverse society. For example, marginalized communities may face barriers to accessing AI-based identification systems, such as limited access to technology or internet infrastructure. In such cases, rigid legal frameworks may unintentionally exclude vulnerable populations, reinforcing existing social inequalities. Therefore, policymakers must strike a balance between legal compliance and flexibility to address the specific needs of different communities.

The protection of personal data is another critical issue highlighted by the research. AI-based identification systems collect vast amounts of sensitive data, including biometric information, which, if not properly protected, can lead to significant risks such as identity theft and fraud (Setiawati et al., 2020). Ensuring the security of this data is essential to maintaining public trust. Governments must implement advanced cybersecurity measures and establish clear policies on data access and usage to prevent misuse.

Within the scope of public services, the government has an obligation to provide the best service for the community as stakeholders (Permatasari, 2020). As AI systems become more autonomous, it becomes challenging to determine who should be held responsible for errors or discriminatory outcomes. Public institutions must establish accountability frameworks that clearly define the roles and responsibilities of all stakeholders involved in the development and deployment of AI systems. Developers, policymakers, and administrators must collaborate to ensure that AI technologies are used ethically and in accordance with legal standards. In line with stakeholders' theory, managers must be able to understand what stakeholders want so that these stakeholders can fully support the goals created by the entity (Dachi & Djakman, 2020). Communication is important in implementing the stakeholders' theory (Estaswara, 2020). Stakeholder theory for assessing taxpayers' interests, becomes relevant, particularly as taxation policies can directly trigger public responses (Hasan, 2021; Nugraha & Darono, 2022).

Transparency is also crucial for building public trust in AI-based systems. Citizens must have access to information about how AI systems function, what data they use, and how

decisions are made. Transparent processes allow individuals to understand and challenge outcomes if they believe their rights have been violated. For example, if an AI system incorrectly identifies a citizen or denies access to public services, individuals should have the means to appeal the decision and have it rectified.

In addition to transparency, public participation is essential in the design and governance of AI systems. Engaging citizens in the policymaking process ensures that AI technologies reflect the values and needs of the communities they serve. Governments should encourage public dialogue about the ethical implications of AI use and provide avenues for citizens to voice their concerns and suggestions.

The integration of AI in single identification systems also raises questions about the sustainability and adaptability of governance frameworks. As AI technologies continue to evolve, regulatory frameworks must be flexible enough to accommodate new developments while ensuring that legal principles are upheld. Continuous evaluation and revision of policies are necessary to keep pace with technological advancements and address emerging challenges.

International cooperation plays a vital role in the governance of AI technologies. Many countries face similar challenges in balancing the benefits of AI with the need to protect individual rights. Sharing best practices and collaborating on regulatory frameworks can help create global standards for AI governance. International agreements on data protection, cybersecurity, and ethical AI use can provide a foundation for national policies and ensure that AI technologies are developed and deployed responsibly.

CONCLUSION

The transformation of NPWP into NIK as the Single Identity Number (SIN) represents a major step toward modernizing public administration in Indonesia. By unifying multiple identification systems into one, the SIN promotes efficiency, transparency, and accountability in government services. Integrating a human credit score system into the SIN framework would bring Indonesia closer to rule-based governance as envisioned by positivism. By adopting standardized financial evaluations, Indonesia can foster transparency, accountability, and trust in both public and private sectors, supporting sustainable economic growth. With robust legal oversight and careful regulation, a credit scoring system could become an essential tool for promoting fair competition and responsible entrepreneurship, aligning the country's development with global best practices.

The use of AI systems further enhances administrative processes, enabling faster data processing, fraud detection, and resource allocation. However, the success of the SIN system depends on careful data management, robust privacy protections, and equitable service delivery. Policymakers must address challenges related to algorithmic bias, data synchronization, and technological infrastructure to ensure that all citizens benefit equally from the system. The Personal Data Protection Law and PMK No. 112/PMK.03/2022 provide essential legal guidelines, but continuous oversight and public participation are required to maintain trust and fairness. With the right safeguards in place, the SIN can serve as a foundation for integrated, citizen-centred public services, paving the way for Indonesia's digital future.

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Analysis of High School Students' Preconceptions on the Concept of Climate Change from the Perspective

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KEYWORDS	ABSTRACT
preconception, climate change concept, visual representation, macroscopic	Preconception is a very important initial understanding for students to have, because preconception can be used as a basis for better learning. One of them is regarding the concept of climate change material, there are still many students who have wrong conceptions. One way to find out students' preconceptions is by using visual representations. The use of visual representation can open students' preconceptions of abstract and complex concepts. This study aims to see and analyze the extent of high school students' understanding of climate change. This study uses qualitative descriptive, with a population and sample consisting of 63 tenth-grade high school students majoring in science at one of the high schools in Indonesia. The data collection technique was carried out by observation and interviews, in this study the researcher used semi-structured interviews. The results of the study revealed that students have a varied understanding of the concept of climate change, there are still many students who experience misconceptions about the concept of climate change. There are three categories of climate change concepts (1) the concept of climate change is correct with a percentage of 37% (23 students), 2) the concept of climate change is based on objects, reviewed from the overall picture that has been visualized by the respondents and 3) the concept of climate change is wrong with a proportion of 63% (40 students). Of the three categories above, based on empirical evidence that has been carried out regarding students' preconceptions of climate change, including at the macroscopic level.

INTRODUCTION

Climate change has become a hotly talked about topic and is increasingly becoming a global concern. How could it not be that in 2020 alone, almost all land areas will experience more heat waves and increasingly hot weather, this is none other than the fact that the impact of climate change has been seen in many aspects of human life (Harmuningsih & Saleky, 2017). One of the biggest causes of climate change is global warming, increasing levels of greenhouse gases, especially CO_2 in the atmosphere. This causes climate change to have a negative impact on human activities on this earth, climate change can be something scary if it continues to occur and is not handled further, of course this handling must be carried out by all elements of the world community, including Indonesia. One of the strategies that can be used is to educate

through educational means, because it is an effective means to understand and teach risk management from the impacts of climate change (Amaliah & Purwaningsih, 2021).

Building students' awareness of environmental problems caused by climate change is certainly not easy. Because environmental education in Indonesia itself is still carried out separately and there has been no curriculum update to improve environmental education. This is reviewed from previous research, that until now students' understanding of the concept of climate change is still minimal (Rosidin & Suyatna, 2017). One of the causes of students' low understanding is from the learning process while at school, which is still not directly taught in the classroom and has not been taught to be used in daily life. In addition, another thing that causes this is that there are many misconceptions among students about climate change, because students think that the discussion of physics learning materials related to climate change is very difficult to understand. Students think that climate change material is abstract and very complex, and too general so that there are often mistakes in understanding the concepts in this material (Asenova[1] & Reiss, 2021; Mayer & Pilegard, 2015).

Therefore, students' initial understanding of a concept is very necessary, because before proceeding to the next level to understand new and sustainable concepts, students' initial understanding is an important basis for students in the learning process (Scribner, 2014). In addition, an initial understanding of the concept of climate change material is very necessary as a way to provide students with a deeper understanding of climate change that is currently occurring. The results of the analysis of previous research on the basic skills that students must have in the 2013 curriculum with science subjects, show that the concept of climate change material is not contained in the basic competencies. This is one of the reasons why students' understanding of the concept of climate change is still low (Nabila, 2022; Weurlander et al., 2012). It is known that students in Indonesia still have low awareness of climate change and still think that climate change is not a serious problem (Sulistiawati, 2024). So, from the various problems above, there are still very few studies that explore students' preconceptions on the concept of climate change. In fact, revealing preconceptions is very important, as one of the efforts to find out students' ideas and ideas in accepting a new material concept.

Preconception itself is an initial understanding that students have before learning about certain material. Each student has different prior knowledge, this understanding can come from experience, knowledge and information received outside of school. One of them is climate change, students have an initial preconception that can be the beginning for knowledge about climate change material. Therefore, it is necessary to make an effort to find out the preconception of students before starting physics learning. One way is by using visual representation, because the use of visual representation can open students' preconceptions of abstract and complex concepts (Prasad & Mkumbachi, 2021; Sari et al., 2017).

The use of visual representation can explore students' understanding of certain concepts, because visual representation can be used as a tool to induce the preconception of Shiva to a certain physics concept, so that the results of this analysis can be used as a foothold for teachers to design better learning with the use of visual representation. Basically, many studies have been conducted related to visual representation, as one example of research conducted by Lasmaria and Kadir (2018), discussing visual representation in physics learning in high school. In this study, it was observed that the use of inappropriate visual representations can result in wrong understanding and difficulties in understanding the material. The results of previous researchers' analyses have shown that the use of visual representation is an attraction for researchers in physics education, because it is very rarely used to explore students' preconceptions about certain concepts in physics.

Previous research highlights the importance of understanding students' preconceptions in science education, particularly on abstract and complex topics such as climate change. For instance, Rosidin and Suyatna (2017) revealed that students often have misconceptions about

climate change, perceiving it merely as seasonal changes rather than a global phenomenon influenced by human activities. Similarly, Nabila (2022) emphasized the role of modeling and virtual laboratories in improving students' understanding of climate change, though significant gaps remain in integrating this topic into school curricula.

The increasing impacts of climate change, including rising global temperatures, extreme weather events, and ecosystem disruptions, necessitate immediate educational interventions to build climate literacy among students. Current curricula fail to adequately address the topic, leaving students unprepared to grasp its complexities or contribute to mitigation efforts. Understanding students' preconceptions is critical to designing effective teaching strategies that combat misconceptions and foster environmental awareness.

While studies have explored students' understanding of specific scientific concepts, limited research has focused on how visual representation can be utilized to uncover students' preconceptions about climate change. Existing studies often neglect the role of macroscopic-level observations and the impact of diverse environmental contexts on students' understanding. This research seeks to fill that gap by analyzing students' visual representations to identify patterns and misconceptions about climate change.

This study introduces a novel approach by combining visual representation techniques with thematic analysis to explore high school students' preconceptions of climate change. By focusing on macroscopic-level observations, the research bridges a critical gap in understanding how students conceptualize this global issue through tangible, everyday experiences.

This study aims to see and analyze the extent of students' initial understanding, especially high school students, regarding the concept of climate change that is happening today. Understanding students' preconceptions of the concept of climate change is very important, in addition to providing for their lives, it is also a demand for the independent curriculum that has been rolled out today. Therefore, the researcher is interested in conducting a study entitled "Preconception Analysis of High School Students on the Concept of Climate Change Reviewed from the Exploration of Visual Representation.

This research offers practical benefits for educators and policymakers. For educators, it provides a framework for assessing students' initial understanding and addressing misconceptions through tailored teaching strategies. For policymakers, it underscores the importance of integrating comprehensive climate education into school curricula, ensuring that students are equipped with the knowledge and skills to address environmental challenges.

The findings of this study have significant implications for educational practice and curriculum development. By highlighting the prevalence of misconceptions about climate change, the research emphasizes the need for more interactive and engaging teaching methods, such as the use of visual representation. It also advocates for curriculum reforms that include climate change as a core topic, fostering a generation of environmentally aware and proactive individuals.

RESEARCH METHOD

The research design used in this study is qualitative descriptive. Qualitative research design has the meaning of understanding and explaining social phenomena and individual experiences through data analysis in the form of words, texts, images and cultural objects. From this, there are several important reasons for the design of this study, namely; (a) focuses on discovering the nature of a particular event or phenomenon being studied; (b) the study is located in a highly factualistic environment to avoid the Hawthorne effect where research participants behave differently knowing that they are being studied; (c) sampling is deliberate with the purpose of obtaining cases that do not have minimal information; (d) data analysis does not need to use pre-existing rules; (e) and the presentation of data involves a direct description

and summary of the information obtained. From this explanation, it is in line with the rhetoric that has been found in previous research which focuses on, (1) analysis of preconception of students' understanding of the concept of climate change with the exploration of visual representation; (2) error analysis on solving the problem of visual representation of geometric optical concepts; (3) data analysis combines several procedures described in existing literature; (4) and implementation in learning visual representation in understanding concepts. So that this research is relevant by using qualitative descriptive to analyze a phenomenon and analyze the preconception of students' understanding of a certain concept.

Data Analysis

The thematic analysis method is the analysis method used in this study after all the data has been collected. This thematic analysis can lead to the process of identification and categorization of preconceptions based on categories generated from codes and the reliability of interpretation is very important. In this study, because the data is in the form of visual representation or in the form of images, there are two analyses, namely: 1). Image data analysis, for the analysis of image data this uses a four-step approach developed by Duncan (2013). The procedural steps are: (a) visual representation annotations are reviewed, and notation is created such as labeling the object/context being drawn. (b) isolate where visual representations are arranged according to the interpreted meaning, detailed descriptions of each individual from visual representations are made. (c) regulates where visual representations are grouped into categories. (d) synthesis in which visual representations according to different categories are made. 2). Interview Data Analysis, on

The analysis of the data from the Wawanvara results is carried out through the Thematic Analysis (TA) stage or commonly referred to as interpretive thematic analysis. TA is defined as a method of identifying, analyzing, and reporting themes or patterns contained in research data. According to (Liamputtong, 2009), in the process there are several main steps that must be taken in thematic analysis. First, the researcher reads and listens to the audio of the entire content or interview transcript repeatedly and carefully to get the meaning of the transcript data. Researchers can underline words that match the relevant meaning of the source to make it easier to get the actual meaning. And in the second step, the researcher provided code to identify the data that could potentially match the question in the study and a brief summary in some of the data. In the third step, the determination of the theme, the determination of this theme is built based on previous codes related to the research phenomenon which will later form several themes, then the relationship between the existing themes is searched for to then become a complete response to the data from the research results. If there is a code or theme that does not match the entire research, it will be replaced with a new theme.

RESULTS AND DISCUSSION

The data described were obtained from the results of the study using observation sheets and interviews that had been filled out by the participants. On the observation sheet, participants were directed to draw according to the preconception of students' visual representation of the concept of climate change. The results of the research were then processed and several data from the research were obtained in the form of: 1) the correct concept of climate change, 2) the concept of climate change based on objects, and 3) the wrong concept of climate change. From the results of the study, there are three categories with the following percentages each.
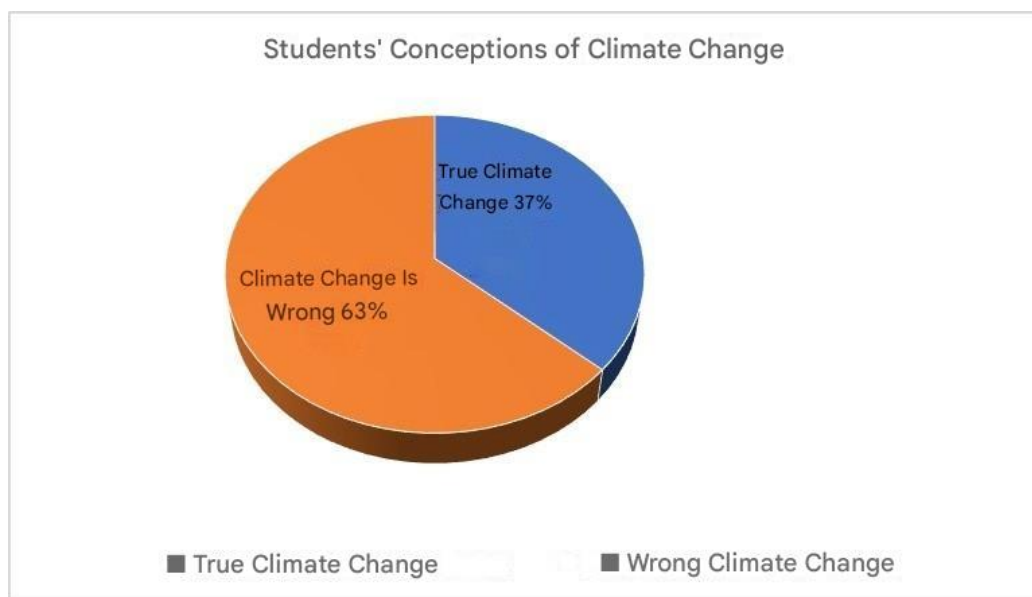
Figure 1 Percentage of Climate Change Concept Data

The Correct Concept of Climate Change

From the results of the data analysis after being categorized into three parts, the first is the correct concept of climate change. From the results of observations and interviews conducted on 63 students, it was found that a total of 23 students or 36.51% of students correctly represented their picture of the concept of climate change. In this category, it is reviewed from the definition of climate change itself, where climate change is a phenomenon of increasing the average temperature of the global atmosphere caused by human activities, especially in the use of fossil fuels and deforestation, resulting in greenhouse gas emissions. As a result, it affects extreme weather changes, sea level lifting, and various other environmental problems. Here are some samples of data from students that represent their initial understanding of the correct concept of climate change.

Figure 2 Visual representation of the correct concept of climate change Respondent One

The results of the interview with one of the students were as follows:

Researchers   : In your opinion, what is the meaning/meaning of the picture? Try to explain

Respondents   : Climate warming affects climate change on the earth, and factory pollution is the same as emm mem, naon mem is changing the earth's climate, namely polluting the air, burning forests is the same as air pollution.

Researchers   : From the pictures you wrote, can this happen or often happens in daily life? Try to explain?"

Respondents   : Have, which pollutes vehicles, if you are in a place, you don't

The visual conception of climate change itself about warming the weather affecting climate change. This is closely related to the concept of climate change according to physics which explains that human activities such as forest burning, vehicle pollution can increase the concentration of greenhouse gases such as carbon dioxide in the atmosphere. Where from the visual conception that has been drawn (4.2) the respondents show that climate change can occur due to forest burning, so that forests become deforested and oxygen levels on earth decrease (O_2), as well as vehicle pollution and pollution from factories. Where if this continues it will result in the temperature on the earth getting hotter, because the atmospheric layer that should be the protector of the earth will gradually become thin due to the activities of humans who do not pay attention to the environment.

From the results of the interview on the visual meaning (4.2) with the statement "Climate warming affects climate change on the earth, and factory pollution is the same as changing the earth's climate, namely polluting the air, burning forests is the same as air pollution" the statement is stated to be completely true. From this statement, actually warming weather can occur as a result of factory pollution and forest burning, as well as vehicle smoke pollution, due to human activities that are carried out continuously so that carbon dioxide (CO_2) levels increase, as a result of which the layers in the atmosphere are thinning so that the temperature on the earth increases and weather feels getting hotter.

The Concept of Climate Change Based on Objects

Furthermore, the concept of climate change based on objects is reviewed from several objects that can be used as a foothold to understand the concept of climate change. Some objects that can be used as a foothold in the concept of climate change such as the earth, atmosphere, ice sheet, sea, plants and animals, as well as humans and several other objects. After the data was analyzed, the results were obtained that out of a total of 63 students (63 people) described objects that were in accordance with the description at the beginning, while some students described other objects.

Table 1 Percentage of climate change concepts by object

It	Object	Frequency	Percentage f/63 x 100 (%)
1	Earth	24	38,09
2	Cloud	2	3,17
3	Animal	5	7,93
4	Factory	10	15,87
5	Smoke	10	15,87
6	Ice	4	6,34
7	Sea	4	6,34
8	Cloud	37	58,73
9	Plant	38	60,31
10	Thermometer	5	7,93
11	Atmosphere	7	11,11
12	Sun	33	52,38
13	Vehicle	2	3,17
14	Fire	3	4,76
15	Human	1	1,58
16	Gmail	1	1,58
17	Rain	25	39,68
18	House	1	1,58
19	Lake	1	1,58
20	Drought	22	34,92
21	Moon	1	1,58
	Total		63

From the results of the analysis of the concept of climate change based on the object, it can be seen from table (1) that basically, students' conception of climate change is widely known from the visual representations that have been drawn by students, where in the results of the research are obtained objects that become a foothold and have a significant influence on the process of climate change. As for the data above, some of the objects that many respondents described were such as plants with the largest percentage, namely 60.31%, clouds at 58.73%, rain at 39.68%, sun at 52.38%, and earth at 38.09%. From this percentage, it can be seen that many students assume that climate change will have an impact on the process of life on this earth. This is because the objects that students describe are all related to the ecosystem of living things on earth.

The Wrong Concept of Climate Change

Basically, the wrong concept of climate change is something that is not in accordance with the existing scientific data. After the observation, the researcher found that as many as 40 students out of 63 students drew the wrong concept of climate change, or about 63.49% of the total respondents. The basis for why the visual representation described is wrong is from the results of interviews with respondents, where the answers of some respondents are not in accordance with theories relevant to scientists related to climate change, the following table of misconceptions about climate change is wrong.

Table 2 Wrong Concept of Climate Change

It	Wrong Conception	Frequency	F/40 x100 % Percentage
1.	Climate change from rain to drought	20	50
2	The sun shines on the earth so it becomes hot and causes plants to dry out and become dry	7	17,5
3	Change nature Originally full of finished trees full the same development so that the impact of clean pollution becomes dirty	2	5
4.	Change weather from bright to cloudy and rainy	7	17,5
5.	Climate change is cold times and hot times	2	5
6.	Weather forecast for one week	2	5
	Total		40

Discussion of Research Results

Based on the results of the research that has been carried out, there are three parts in students' understanding of preconceptions of climate change through visual representation. Among them are (1) the correct concept of climate change, (2) the concept of climate change based on objects, and (3) the wrong concept of climate change. Of the three categories, each has a different percentage, for the correct concept category of 37%, and for the wrong concept to get a percentage of 63%. Meanwhile, for the category of climate change concepts based on objects, it was reviewed from the entire image that had been visualized by the respondents. From this percentage, it can be seen that there are still many students who represent the wrong preconception of climate change, so that students' understanding of the concept of climate change is still relatively low. This is in line with the results of previous research by (Rosidin & Suyatna, 2017) stated that until now students' understanding of the concept of climate change is still low, because many students still think that climate change is a change of seasons.

It is also in line with the research of Nur Utami, et al. (2021) who stated that the understanding of Newton's Law III is still low. Most students are disturbed by the difference in mass in the interacting object, and also disturbed by the initial condition in one of the stationary objects. In the concept of climate change, students tend not to understand what the meaning of climate change itself is, so students think that climate change is the same as seasonal change.

In visual representation, students can draw related material that will be conveyed through students' thinking about the concepts to be taught. From the results of the research that has been carried out, that with the visual representation of climate change preconceptions, researchers can find out the extent of students' knowledge and understanding related to the concept of climate change, so that the use of this visual representation test will be very useful to be carried out in learning. The results of the study also show that students' initial understanding through visual representation is still diverse and varied. This is in line with research conducted by (Canlas, 2019), which obtained research results showing that students often associate friction with human activities such as rolling and rolling objects on flat surfaces and are contextual. And there is a limited prejudice evidenced by non-representation of static friction and non-representation of friction at the mesoscopic and microscopic levels. Basically, humans are equipped with the understanding to develop what is in their minds, in this ability they can foster a good understanding of concepts, so that later it will affect the process of students' understanding of a learning material. As revealed by Kriss et al in (Arum & Abdurrahman, 2014) that humans are able to convey, receive, and interpret intentions through various deliveries and communications. From the results of the research, it is evident that with the visual representation of students through images, that students already have a preliminary understanding of the concept of climate change. So that the results of this observation can later be used as a reference to explain more complex material about climate change. This is relevant to Goldzin's opinion, (Mudzakir, 2006) states that representation is a set that can describe, represent, and symbolically represent something in a certain way.

The results of the preconception test with visual representation skills show that most students still have problems in presenting climate change concept material visually through the images they make. Some of the problems faced by students are: (1) students still do not know what climate change is, (2) students themselves know the impact of climate change, but the concept of climate change itself is still unfamiliar, (3) many students think that climate change is a change in weather from the dry season to the rainy season and vice versa. This can be proven from the results of the students' drawings, which mostly illustrate that climate change from the dry season to the rainy season. (4) Some students represent that climate change is a weather forecast for several days or weeks, this is evidenced by the results of pictures by students describing the weather forecast for one week.

From the results of the observations that have been made by the researcher through the analysis of students' preconceptions of climate change with the exploration of visual representations that have been carried out on 63 students, the results were obtained that 63% (as many as 40 people) represented an image that was not appropriate with the concept of climate change, so that there are still many students who have the wrong conception of climate change. And as many as 23 students represented the conception of climate change correctly, from which the researcher can see that the use of visual representation to find out students' initial conception of climate change can be known. Therefore, based on the research that has been conducted, it can be stated that the ability of visual representation to find out students' initial understanding of climate change can be declared to be influential.

CONCLUSION

Referring to the formulation of the problem and based on the results of the analysis of observation data processing and interviews, it can be concluded that students have different understandings of the preconception of the concept of climate change. This can be seen in the visual representations drawn by students and from interviews conducted with students, from the results of pictures and interviews with students there are different images and opinions about climate change. From the results of the analysis of visual representations, the concept of climate change can be divided into three categories, namely: 1) the correct concept of climate

change; 2) the concept of climate change based on objects; 3) the wrong concept of climate change. Of the three categories, and based on empirical evidence that has been carried out regarding students' preconceptions of climate change, including at the macroscopic level, which means that the observation results are reviewed from students' daily experiences, where at this level students often see and involve objects in large sizes that can be seen by humans.

Students experience wrong preconceptions in the concept of climate change which tends to be complex. It is still rare to use visual representation to find out students' understanding is one of the factors. The difficulty of students in explaining and describing the results of visual representation is a supporting factor for students to have difficulty understanding the concept of climate change, and it is still rare for teachers to encourage students to develop their own visual representation based on understanding of a concept is another factor that makes students less understanding of the concept being taught. Thus, teachers can use visual representations as a tool to identify conceptual understanding in certain physics materials; Teachers can consider using visual representations as an evaluation tool for students.

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The Influence of Interactive Learning Media Based on Ispring Suite 11 on Physics Learning Outcomes on Gas Kinetic Theory Material at SMA Negeri 25 Garut

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KEYWORDS	ABSTRACT
gas kinetic theory, students, ispring suite, learning media	This research is motivated by the importance of learning media that is tailored to the needs of students, one of which is in the process of improving learning outcomes. This research was conducted because of the low learning outcomes of students in physics subjects, one of which is due to the use of learning media in the classroom, which still tends to use conventional learning media. Therefore, efforts are needed so that student learning outcomes can be improved. Interactive learning media based on ispring suite 11 is an interesting learning medium and allows students to actively participate in learning activities and improve student learning outcomes. The purpose of this study is to determine the influence of interactive learning media based on ispring suite 11 on physics learning outcomes on gas kinetic theory material. The type of research used is Quasy Experimental with the design of "Nonequivalent Pretest and Posttest Control Group", samples are selected by purposive sampling technique. Class XI Science 3 is used as an experimental class and Class XI Science 1 is used as a control class. The instruments used were tests with multiple choice of 20 questions and questionnaires. Based on the calculation using the effect size, a value of 1.36 was obtained which was categorized as very strong, so it was proven that ispring suite 11-based interactive learning media had a significant influence on student learning outcomes. And the results of the study show that interactive learning media based on ispring suite 11 is proven to be effective in improving student learning outcomes compared to conventional media, this is seen from the results of the N-gain test in the experimental class of 71.05% and in the control class of 54.24%.

INTRODUCTION

Physics is a science that has the characteristics of abstract and concrete concepts and has a relationship between natural phenomena and daily life. Thus, teachers must be able to explain various concepts of physics into real or visible forms. However, in the physics learning process, students experience difficulties when learning or understanding physics material, so many students become lazy to learn physics. In addition, in the learning process using only conventional media, this can cause students to feel bored in learning and can produce a passive learning experience that has the potential to cause suboptimal student learning outcomes. According to Handayani & Suharyanto (2016) said that uncreative and varied learning media

is known to be a factor that makes students not interested and lack motivation to learn physics, so that the cognitive results are less than optimal. Such learning, if carried out continuously, will make students bored in participating in lessons, so it requires media that can be used according to the material taught so that students are more interested in participating in lessons (Arsyad, 2014; Chusni et al., 2018).

The material chosen in this study is gas kinetic theory. This is based on interviews that have been conducted that the material of gas kinetic theory is one of the abstract materials that cannot be observed directly, namely learning about the properties of gases based on the behavior of the atoms that make up gases that move randomly and students have difficulty in determining the equations of gas kinetic theory which results in their inability to solve physics problems, This factor results in low student learning outcomes. In order to help smooth and attract students' enthusiasm when learning so that it is possible to improve the desired learning outcomes, interactive learning media is needed to improve good learning outcomes (Darma, 2021; Dasmo et al., 2020).

Through interactive learning media, it can attract students' willingness, motivation, activeness, and creativity, this is desirable to improve student learning outcomes. Media that can be used as a solution to improve student physics learning outcomes is ispring suite 11-based interactive learning media (Butar et al., 2022; Yanto, 2019). In addition, physics teachers at SMA Negeri 25 Garut have never used interactive learning media based on ispring suite 11 on physics materials. Ispring Suite is a computer-aided media that can accommodate educators in presenting material and provide the application of various learning to make it easier for students to understand the material (H. Wijayanto et al., 2017).

The use of interactive learning media has become a necessity in modern education, especially in addressing the challenges faced by students in understanding abstract physics concepts. By integrating interactive elements, such as animations, simulations, and multimedia presentations, students can visualize complex processes and better comprehend the underlying principles. This approach not only bridges the gap between theoretical and practical understanding but also aligns with the evolving educational trends that emphasize student-centered learning. As a result, the adoption of such media has been proven to increase student engagement and foster a deeper interest in learning physics (Gat, 2019; Oktaviani & Rustandi, 2018).

In addition, interactive learning media such as iSpring Suite 11 offers a user-friendly platform for both teachers and students. With its ability to transform static materials into dynamic and interactive content, iSpring Suite 11 empowers educators to design lessons that cater to diverse learning styles. This is particularly relevant in teaching abstract topics like the gas kinetic theory, where visualizing the motion of gas molecules and their interactions can significantly enhance comprehension. By employing such tools, teachers can ensure that students not only understand the material but also develop the problem-solving skills needed to excel in physics (Rahmawati & Wiyatmo, 2021; Ramadhani & Liwayanti, 2021).

The application of iSpring Suite 11-based interactive learning media also supports the development of critical thinking and creativity in students. Through features such as quizzes, interactive diagrams, and gamified learning activities, students can actively engage with the material, leading to an improved ability to retain and apply knowledge. This active learning approach shifts the traditional teacher-centered paradigm to a more collaborative and engaging process, where students take an active role in their educational journey. Such innovations are particularly beneficial in overcoming the limitations of conventional learning methods, which often result in passive classroom experiences (Sartika, 2022).

Finally, the integration of interactive media in physics learning represents a step forward in enhancing the quality of education, particularly in schools that have yet to adopt such technologies. The introduction of iSpring Suite 11 at SMA Negeri 25 Garut serves as a strategic

initiative to address the existing challenges in teaching physics. By utilizing this platform, educators can create a more stimulating and effective learning environment, ultimately leading to better academic performance and a renewed enthusiasm for physics among students. This effort underscores the importance of leveraging technology to make education more accessible, enjoyable, and impactful for all learners (P. A. Wijayanto, 2017; Yanti & Fatisa, n.d.).

Based on the problem, the results of the interviews and some opinions from relevant research, it encourages researchers to conduct research and researchers want to prove whether there is really an influence of ispring suite-based interactive learning media in improving student learning outcomes. The researcher chose to conduct this research because considering the problems that occur in the field, namely many low physics learning outcomes because in the learning process they still use conventional learning media and are still teacher-centered. Therefore, based on this background, the researcher is interested in conducting a research entitled "The Influence of Interactive Learning Media Based on Ispring Suite 11 on Physics Learning Outcomes on Gas Kinetic Theory Material".

Previous studies have demonstrated the importance of integrating interactive learning media into science education to enhance student engagement and comprehension. For instance, Rahmawati and Wiyatmo (2021) explored the effectiveness of iSpring Suite 9 in fostering interest and independent learning in physics, showing positive outcomes. Similarly, Dasmo et al. (2020) highlighted the benefits of interactive media in improving physics learning outcomes, though these studies often focus on general physics topics without delving into specific abstract concepts like gas kinetic theory. This indicates a need for more targeted research to address specific content areas using interactive tools.

The need for innovative educational tools is underscored by the persistent challenges in teaching abstract physics concepts such as gas kinetic theory. Conventional learning methods often fail to engage students, leading to low academic performance and disinterest in physics. As education moves towards technology integration, adopting advanced interactive learning media like iSpring Suite 11 is crucial to bridge the gap between traditional teaching and modern learning demands.

While prior research has explored the general use of interactive media in education, there is limited empirical evidence on its application to specific physics topics such as gas kinetic theory. Additionally, studies rarely measure the direct impact of interactive tools on student learning outcomes compared to traditional methods, leaving a gap in understanding their efficacy in enhancing comprehension of abstract concepts.

This study provides a novel contribution by applying iSpring Suite 11-based interactive learning media specifically to the teaching of gas kinetic theory. By focusing on a challenging and abstract physics topic, the research introduces a targeted approach to leveraging technology in addressing content-specific learning difficulties.

The study aims to evaluate the influence of iSpring Suite 11-based interactive learning media on students' physics learning outcomes, particularly in the context of gas kinetic theory. It seeks to compare the effectiveness of this media with conventional teaching methods and assess its potential to improve student engagement and comprehension.

The findings of this study offer practical benefits for educators by providing evidence-based insights into the effectiveness of interactive learning tools in teaching abstract physics concepts. For students, the use of iSpring Suite 11 enhances their ability to grasp complex topics, fosters critical thinking, and improves problem-solving skills.

This research has significant implications for education policymakers and curriculum developers. It highlights the importance of integrating advanced interactive media into teaching strategies to improve learning outcomes. The study also serves as a foundation for future research, encouraging the adoption of technology-driven approaches in addressing educational challenges, particularly in science subjects.

RESEARCH METHOD

Research Design

The type of research carried out is quantitative with the Quasi Experimental method. The research design used is the Nonequivalent Pretest and posttest Control Group. There are two groups of research subjects, namely the experimental and control classes. Both classes will be pretested before treatment, to ensure their respective conditions before being treated. After receiving the treatment, both classes will conduct a posttest to find out the condition of each class. The difference between the two is in the treatment that will be applied. The control group will be given material using conventional learning media, while the experimental group will be given material using interactive learning media based on ispring suite 11. The description of the Nonequivalent Control Group is shown in the following table 1.

Table 1 Nonequivalent Control Group

Group	Pretest	Treatment (X)	Posttest
Experiment	O1	XE	O2
Control	O1	Export	O2

Information:

O1 = Experiment and control groups given pretest

O2 = Experiment and control groups given posttest

XE = The experimental group was given learning treatment using interactive media based on iSpring Suite 11

Export = The control group was given learning treatment using conventional media

Participants

The population in this study is all students of class XI Science at SMA Negeri 25 Garut.The sampling technique in this study was taken based on the consideration of the subject teacher (purposive sampling), namely the sample used only in two classes, namely class XI Science 1 and XI Science 3 SMA Negerri 25 Garut, with a total of 29 students in each class.

Instruments

The researcher has prepared several instruments to answer the problems in the research, which aims to obtain data that will support the research, namely:

a. Test

The test is applied to find out the difference in learning outcomes. The form of the test is in the form of multiple choice of 30 questions with 5 multiple choice answers and only 1 correct answer. Before the implementation of the learning outcome test, in data collection, questions will be distributed to students outside the sample for trial. Furthermore, after completion, a validity test, reliability test, question difficulty test, and discriminating power test are carried out, with the aim of getting good questions.

b. Questionnaire

The questionnaire in this study is in the form of a questionnaire of student responses to interactive learning media based on ispring suite 11 on gas kinetic theory material, in this study a questionnaire was also chosen because this study has quite a lot of respondents. This study uses a closed questionnaire and the questionnaire calculation in this study uses the Likert scale as a variable measurement scale.

Data Analysis

Analysis of Student Learning Outcome Data

In the analysis stage of student learning outcome data, the data used is pretest and posttest score data on student learning outcomes from both classes that have been processed previously. The purpose of this data analysis is to answer the formulation of the problem in the research.

Data was obtained by testing a multiple-choice test of 20 questions in the experimental class and control class. This study uses descriptive statistical analysis including mean values, maximum values, minimum values, and standard deviations. Followed by the prerequisite test, namely the normality test and the data homogeneity test using the appropriate test. If the results of the data analysis are declared normal and homogeneous, then the hypothesis test uses a t-test with an independent sample t-test. Then the researcher conducted an effect size test to determine the effect of using interactive learning media based on ispring suite 11 and conducted an N-gain test.

Data analysis of Student Response Questionnaire

To describe the students' response to the use of interactive learning media based on ispring suite 11, it was analyzed by calculating the overall average score generated using the Likert scale. Student responses will be evaluated through filling out a questionnaire which is then calculated as a percentage.

RESULTS AND DISCUSSION

Descriptive Analysis
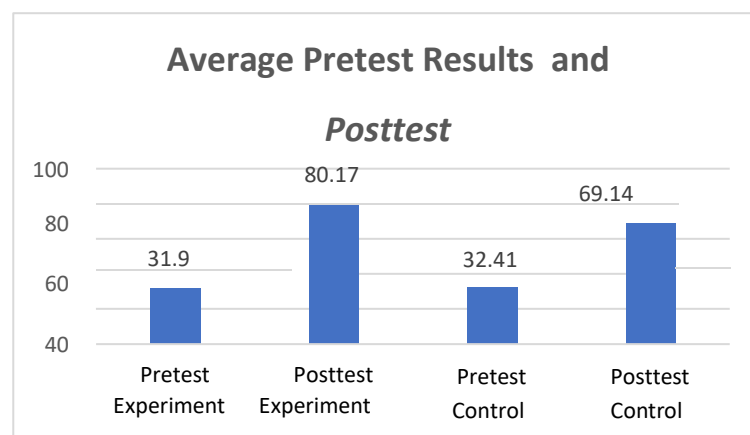
Figure 1. Average pretest and posttest results

From the results of the study, the pretest and posttest values in the experimental class and control class are obtained as shown in figure 1. The average pretest score of the experimental class was 31.90, while the posttest score was 80.17. The average pretest score in the control class was 32.41, while the posttest score was 69.14.

Normality Test

The results of the pretest normality test in the experimental class and the control class can be seen in the following table 2.

Table 2 Results of Pretest Normality Test

Normality Test				
	Shapiro-Wilk			
Class	**Statistics**	**Df**	**Sig.**	**Conclusion**
Experiment	0,938	29	0,089	Usual
Control	0,931	29	0,058	Usual

Source: Research document, processed by IBM SPSS Stattistic version 26

Based on the data analysis in table 2, the results of the calculation of the pretest score in the experimental class were obtained, which was 0.089, which means that it exceeded the significance value of $\alpha = 0.05$ (0.089 > 0.05) so that it showed that the sample came from a normally distributed population. Then for the results of the calculation of the pretest score in the control class, which is 0.058, it means that it exceeds the significance value of $\alpha = 0.05$

(0.058>0.05) so that it shows that the sample comes from a normally distributed population. The analysis of the results of the posttest normality test of the experimental class and the control class can be seen in the following table 3.

Table 3 Results of Posttest Normality Test

Normality Test			
Class	**Shapiro-Wilk**		**Conclusion**
	Statistics	**Df Sig.**	
Experiment	0,944	29 0,129	Usual
Control	0,925	29 0,052	Usual

Source: Research document, processed by IBM SPSS Stattistic version 26

Based on the data analysis in table 3, the results of the posttest score calculation in the experimental class were obtained which was 0.129 which means that it exceeded the significance value of α = 0.05 (0.129 > 0.05) so that it showed that the sample came from a normally distributed population. The results of the posttest score calculation in the control class were 0.052 which means that it exceeded the significance value of α = 0.05 (0.052 > 0.05) so that it showed that the sample came from a normally distributed population.

Homogeneity Test

The homogeneity test was carried out on the pretest data of the two classes, so the results of the homogeneity test for the pretest of the two classes were obtained in the following table 4.

Table 4. Results of Pretest Homogeneity Test

Homogeneity Test					
Class		**Test Of Homogenity of Variance**			**Conclusion**
		Statistics	df1	DF2 Sig.	
Experiments and Control	Based On Mean	0,50	1	56 0,823	Homogeneous

Source: Research document, processed by IBM SPSS Statistic version 26

Based on the results of the calculation in table 4, the homogeneity test in the preliminary pretest data shows that in the learning outcomes of students in the experimental class and control class with the results based on mean, the value of 0.823 exceeded the significance value of α = 0.05 (0.823 > 0.05), so that the pretest of both homogeneous variances can be known.

The homogeneity test was also carried out on the posttest data of the two classes, so the results of the homogeneity test for the postest of the two classes were obtained which are presented in the following table 5.

Table 5. Posttest Homogeneity Test Results

Homogeneity Test					
Class		**Test Of Homogenity of Variance**			**Conclusion**
		Statistics	df1	DF2 Sig.	
Experiments and Control	Based On Mean	2.583	1	56 0,114	Homogeneous

Source: Research document, processed by IBM SPSS Statistic version 26

Based on the results of the calculation in table 5, the homogeneity test on the final test data of the posttest shows that in the learning outcomes of students in the experimental class and control class with the results based on mean, a value of 0.114 means that the value exceeds the significance value of α = 0.05 (0.114> 0.05), so it can be known that the pretest of both variances is homogeneous.

T-test

The analysis of the data of the pretest t-test results in the control class and the experimental class is presented in the following table 6.

Table 6. Results of the Experimental and Control Class Pretest t-Test

		Independent Sample Test		
	Class	Average	Sig (2-tailed)	Conclusion
Pretest	Experiment	31.90	0,789	Ho accepted
	Control	32.41		

Source: Research document, processed by IBM SPSS Statistic version 26

Based on table 6, the results of the independent sample test on Equal Variances Assumed obtained a value of Sig. (2-tailed) $\alpha = 0.789$ which means greater than 0.05 (0.789 > 0.05), then Ho was accepted and Ha was rejected so that there was no difference in the improvement of learning outcomes between the experimental class and the control class before being given a treatment. Because there is no difference in the improvement of learning outcomes in the initial ability, the next test is the t-test in the final ability or posttest. The analysis of the results of the posttest t-test in the experimental class and the control class is shown in the following table 7.

Table 7 Results of Post-test t-Test of Experimental Class and Control Class

		Independent Sample Test		
	Class	Average	Sig (2-tailed)	Conclusion
Posttest	Experiment	80,17	0,000	Ha accepted
	Control	69,14		

Source: Research document, processed by IBM SPSS Statistical Version 26 calculation

Based on table 7, the results of the independent sample test on Equal Variances Assumed obtained a value of Sig. (2-tailed) $\alpha = 0.000$ which means less than 0.05 (0.000 < 0.05), so Ha is accepted and Ho is rejected so that there is a difference in the improvement of learning outcomes between the experimental class that uses ispring suite 11-based interactive learning media and the control class that uses conventional learning media.

Effect Size

Based on the calculation of the effect size, it was obtained as 1.36. The value of this effect size when viewed in the interpretation table of the Effect Size of the Cohen scale, shows that the treatment given by the researcher has a very strong influence with a category.

N-Gain

The results of the n-gain test in the experimental class and the control class are shown in the following table 8.

Table 8. N-Gain Test Results of Experimental and Control Classes

Class	Average N-Gain Score	Average N-Gain (%)
Experiment	0,71	71,05
Control	0,54	54,24

Based on table 8, it shows that the average N-Gain Score in the experimental class using interactive learning media based on ispring suite 11 was obtained at 0.71 and included in the medium category, then the N-Gain percent value was 71.05% and the criteria were quite effective. Meanwhile, the average N-Gain Score in the control class using the conventional learning model was obtained at 0.54 which was included in the low category, then, the N-Gain percent value was 54.24% and had less effective criteria.

Questionnaire Data Analysis

The results of the questionnaire calculation that are reviewed from four aspects are shown in the following table9.

Table 9. Results of Likert Scale Questionnaire Calculation

It	Aspects	Average Answer Respondents (%)
1	Benefits of Interactive learning media Based on iSpring Suite 11	80,23 %
2	Ease of use of ispring suite 11-based Interactive learning media on the material Gas Kinetic Theory	79,66%
3	Materials in ispring suite 11-based Interactive learning media on theoretical materials Gas Kinetics	81,15%
4	Languages used in ispring suite-based Interactive learning media 11 on gas kinetic theory material	85,52%

Discussion

This study aims to determine the influence of interactive learning media based on ispring suite 11 on physics learning outcomes on gas kinetic theory material at SMA Negeri 25 Garut. In this study, 3 meetings were needed with a sample of 58 respondents, namely 29 students of class XI Science 3 as an experimental class and 29 students of class XI Science 1 as a control class. In this study, conventional learning media is used in the control class and interactive learning media based on ispring suite 11 is used for the experimental class. The results of this study are to answer the problem formulation that has been explained earlier, namely:

The Effect of Interactive Learning Media Based on ispring Suite 11 on Physics Learning Outcomes on Gas Kinetic Theory Material at SMA Negeri 25 Garut

Based on the results of the study, effect size was carried out to determine the influence of the treatment that has been carried out. The results of the calculation of the effect size obtained a value of 1.36 which is categorized as very strong, which means that the treatment carried out has a very strong influence. This influence was obtained due to the use of interactive learning media based on ispring suite 11 on student physics learning outcomes.

The difference in the improvement of physics learning outcomes in gas kinetic theory material in high school in cognitive aspects between those who use ispring suite 11-based interactive learning media and conventional learning media

Based on the results of the research, the results of the pretest and posttest were obtained in both the experimental class and the control class. The average score of the pretest of the experimental class was 31.90 and the posttest score was 80.17. The average pretest score in the control class was 32.41 and the posttest score was 73.95. The average score of the two classes has a significant difference. The difference stated that the average score of the experimental class was greater than the average value of the control class, which showed the difference in the treatment of the experimental group towards the cognitive score during the physics learning process on the gas kinetic theory material. Therefore, students who learn using interactive learning media based on ispring suite 11 show higher learning outcomes so that they experience an increase than students who learn using conventional learning media.

Based on the results of the N-Gain test that has been carried out by the researcher, it is stated that the results of the pretest and posttest scores in the experimental and control classes produced a decision, namely the effectiveness of interactive learning media based on ispring suite 11 on student learning outcomes.

Student response to learning using interactive learning media based on ispring suite 11

The results of the student response questionnaire on the learning that has been carried out show that most of the students give a positive response to learning using interactive learning media based on ispring suite 11. This is evidenced by the results of the calculation of the student response questionnaire using the Likert scale on the material aspect of gas kinetic theory, the result was 80.23%, the score showed that the classification was very agreeable. The second aspect is the ease of use of interactive learning media based on ispring suite 11 on gas kinetic theory material, the result was 79.66%, the score showed an agreement classification. The third aspect is the material contained in the interactive learning media based on ispring suite 11 on the gas kinetic theory material, the result is 81.15%, the score shows that the classification is very agreeable. The fourth aspect, namely the language used in the interactive learning media based on ispring suite 11 on the gas kinetic theory material, obtained a result of 85.52%, showing a classification that strongly agrees. From this, it can be concluded that there is a positive response of students to the learning carried out.

CONCLUSION

Interactive learning media based on ispring suite 11 on physics learning outcomes on gas kinetic theory material at SMA Negeri 25 Garut has a significant influence. This is evidenced based on the calculation of an effect size of 1.36 which is included in the very strong interpretation criteria. Then, after the independent sample test was carried out, it was decided that there was an increase in student learning outcomes after being treated using interactive learning media based on ispring suite 11. Then interactive learning media based on ispring suite 11 has proven to be effective in improving physics learning outcomes compared to conventional learning media. This was done by the N-Gain test in the experimental class which produced an average N-Ngain score of 0.71 and an N-gain percent of 71.05%. The student response to ispring suite 11-based interactive learning media is in the high category.

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Cavities in Law Regarding Consumer Protection Due to Non-Similar Trademark Similarities

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KEYWORDS	ABSTRACT
consumer protection, legal gaps, non-similar trademark similarities	Consumer protection is an important aspect of intellectual property law, particularly in the context of non-similar trademark similarities. This study aims to identify legal gaps that arise due to the lack of clear regulations concerning trademarks that are not of the same type. In this research, the research method used is the statutory approach, also known as normative legal research. In the first subsection, various forms of legal gaps are outlined, including difficulties in determining the level of similarity between trademarks in different categories and the impact this has on consumers' rights to receive quality products. This study also discusses the consequences arising from these legal gaps, such as confusion among consumers and the potential for deception by irresponsible business actors. Additionally, the study suggests remedial measures, including the need for regulatory revisions and strengthening law enforcement, to ensure more effective protection for consumers. It is hoped that the results of this research can contribute to the development of better legal policies for consumer and trademark protection in Indonesia.

INTRODUCTION

Indonesia, as a rule of law country, is based on the principle that state power must be exercised in accordance with just laws and the principles of justice. The rule of law is an ideal goal for every country, including Indonesia, as mandated in Article 1 paragraph (3) of the 1945 Constitution, which states that "The State of Indonesia is a Law State." In its capacity as a law state, the principle of the supremacy of law or Rule of Law must be consistently upheld so that law can function as a controller, supervisor, and limiter of state power. Law must act as an instrument for regulating and controlling state authority (Pieris & Widiarty, 2017).

In the process of law enforcement, it is important to understand that the law is coercive in nature; it serves as an instrument to regulate societal life and provides a means to resolve various issues that arise. The presence of the law is expected to provide justice before the law without any discrimination (Arifin & Iqbal, 2020). If the interests of the public are harmed, according to Article 1365 of the Civil Code, an individual who causes harm to another party is obliged to provide compensation to the harmed party. Compliance with consumer protection related to trademarks includes the right of every citizen to obtain legal protection. The state has the obligation to provide this legal protection, which is intended as protection granted to legal subjects through legal mechanisms, both preventive and repressive, and it can take the form of both oral and written provisions (Subekti & Tjitrosudibio, 2023).

The rapid development in various aspects of life today is marked by an increase in the transparency of information technology, allowing events or discoveries in one area to be easily known and disseminated to other parts of the world. Protection of Intellectual Property Rights

(IPR) should be a shared concern and interest to create a conducive climate. Intellectual Property Rights, often abbreviated as "IPR," are rights that arise from human thought resulting in products or processes that are beneficial for life. In general, the objects protected under IPR include works produced by human intellectual capabilities, one of which is Trademarks. It is important to note that a trademark can become a highly valuable asset commercially. In fact, a company's brand is often more valuable than the company's tangible assets (Lindsey et al., 2022).

Intellectual Property Rights (IPR) are assets that arise from human intellectual creations, whether in the form of science, technology, art, literature, or other forms produced through intellectual abilities. The objects of IPR include the works that emerge from human creativity, which acquire value and ownership only after being manifested in a concrete form that can be seen, heard, read, or practically utilized. IPR grants exclusive rights from the state to the individuals who hold these rights, such as inventors, creators, and designers, as a form of recognition for their creativity. This right aims to encourage others to continue innovating and further developing intellectual works in the future (Banindro, 2015).

Trademarks play an essential role in trade and industry, as they are able to significantly influence, among other things, the differentiation between similar products. A trademark serves as an indicator of the quality of a good or service and becomes a reference for consumers when choosing products to purchase (Wijaya, 2020). In Indonesia, regulations regarding trademarks are also established to prevent unhealthy business competition. With the presence of a trademark, the authenticity of a product can be distinguished, which often leads to the phenomenon where the high price of a product is not solely based on the item itself, but also on the influence of its brand. Therefore, it can be concluded that trademarks hold an important role and significant value for a product. This perception makes trademarks regarded by business actors as elements that can generate greater profits compared to other brands (SILVIYA, 2016).

The allocation of trademarks to a product or service also serves to prevent unhealthy business competition, as trademarks can distinguish the origin, quality, and authenticity of products. The price of a product is often high not solely due to the quality of the item, but because of the value associated with the brand. This indicates that trademarks possess rights that are immaterial in nature. Essentially, business competition is a positive phenomenon, as it can encourage producers to enhance quality and increase production for competitive advantage, ultimately benefiting consumers, society, and the nation's economy (Shaleh & Trisnabilah, 2020)t. However, there are many businesses that engage in unhealthy competition, such as imitating well-known brands by creating nearly identical trademarks. Such actions harm consumers and owners of famous brands, as they can lead to confusion when choosing products and trigger business practices that may violate the law. These unlawful acts not only contradict legal provisions but also violate norms of decency, morality, and other social norms in trade, which can lead to unhealthy practices or unfair competition. Therefore, strong protection of trademark rights is necessary, both nationally and internationally, to safeguard registered and well-known brands, as well as to promote healthy and competitive business competition. Legal protection for trademarks has been established with the enactment of Law No. 20 of 2016 on Trademarks (Jened, 2015).

The implications of legal protection for trademarks can be seen in Supreme Court Decision Number 29 PK/Pdt.Sus-HKI/2016. The Petitioner for Review (who is also the Respondent in the Cassation) is a well-known car manufacturer, Bayerische Motoren Werke (BMW), hereinafter referred to as the Plaintiff. BMW is one of the leading global companies, ranked among the top 100 in the Fortune Global 500 list. The BMW brand ranks 12th among the 100 Best Global Brands according to the ranking published by Interbrand. BMW cars are often featured in various Hollywood movies, including the popular action film Mission

Impossible 4 starring Tom Cruise. BMW has a long history in the automotive industry, starting with motorcycle production in 1917, followed by car production in 1928. The trademark "BMW" was first registered in Germany in 1929 and remained effective until February 28, 2019, well before the Defendant submitted their trademark registration. Currently, BMW has registered the trademark in more than 150 countries, including Indonesia, for various products including vehicles, fashion, and sports (Widiarti, 2019).

The Plaintiff also holds rights to the BMW logo, which consists of a circular design with two quarter-circle sections in white, symbolizing spinning propellers set against a sky-blue background. In 2013, the Plaintiff filed a lawsuit against Henrywo Yuwijono, hereinafter referred to as the Defendant, in the Commercial Court at the Central Jakarta District Court to cancel the Defendant's trademark "BMW Body Man Wear." The Defendant registered the trademark "BMW Body Man Wear" on May 3, 2002, and obtained registration number IDM000016513 on September 17, 2004, in Class 25 for fashion goods (Hery Firmansyah, 2013). On October 20, 2008, the Defendant also registered a logo for that trademark and obtained registration number IDM000181631. The cancellation of the lawsuit was based on Article 68 of Law Number 15 of 2001 concerning Trademarks, stating that a cancellation lawsuit can be filed by a party with a legitimate interest. This cancellation was grounded in Article 4, which states that the Defendant applied for registration of trademarks in bad faith. Article 6 paragraph (1) letter b states that the Defendant's trademarks are fundamentally and/or entirely similar to the well-known trademarks "BMW" and "BMW LOGO" owned by the Plaintiff for similar goods (Putra, 2014).

Based on the evidence and reasons presented by the Plaintiff, the Panel of Judges stated that the BMW trademark owned by the Plaintiff is proven to be a globally recognized trademark. On the other hand, the trademark registered by the Defendant was deemed to exhibit bad faith in registering the "Body Man Wear" trademark as it was considered to exploit the fame of the German BMW brand that is widely known. The Panel of Judges then ordered the Co-Defendant, the Directorate General of Intellectual Property, to cancel the Defendant's BMW trademark, as stated in the Commercial Court Decision at the Central Jakarta District Court Number 50/Pdt.Sus/Merek/2013/PN Niaga Jkt. Pst. In response to the ruling, the Defendant submitted a cassation to the Supreme Court on the grounds that the cancellation request submitted by the Plaintiff had expired, as it exceeded the five-year period since the protection of the Defendant's BMW trademark began in 2002 and 2005, while the cancellation lawsuit was only filed in 2013. This refers to the provisions of Article 69 paragraph (1) of Law Number 15 of 2001 concerning Trademarks. The Supreme Court then granted the cassation and annulled the Central Jakarta District Court's Commercial Court Decision Number 50/Pdt.Sus/Merek/2013/PN Niaga Jkt. Pst through Supreme Court Decision Number 79 K/Pdt.Sus-HKI/2014 on October 27, 2014.

The Plaintiff was dissatisfied with the cassation ruling and filed a final legal remedy in the form of a Review (PK) to the Supreme Court. However, this attempt was also unsuccessful. The Supreme Court merely changed the ruling from "rejected" to "not accepted" through Decision Number 29 PK/Pdt.Sus-HKI/2016. In its consideration, the Panel of Judges argued that the trademark cancellation lawsuit was not accepted because the disputed goods did not fall within the same category (Alrit et al., 2021). The Supreme Court also emphasized that there is currently no Government Regulation that further regulates Article 6 paragraph 2 of Law Number 15 of 2001 concerning Trademarks. Based on the plenary session of the civil chamber as outlined in the Supreme Court Circular Number 03/BUA.6/H.S/SP/XII/2015, it was agreed that cancellation lawsuits for trademarks that are fundamentally similar but for dissimilar goods must be declared not accepted, and previous Supreme Court decisions regarding the same trademark for dissimilar goods no longer serve as guidelines. The decision reads as follows:

1. Granting the petition for review from the Petitioner, Bayerische Motoren Werke Aktiengesellschaft (BMW).
2. Annuling Supreme Court Decision Number 79 K/Pdt.Sus-HKI/2014 dated October 27, 2014, as well as the Commercial Court Decision at the Central Jakarta District Court Number 50/Pdt.Sus/Merek/2013/PN Niaga Jkt. Pst dated December 10, 2013.
3. Declaring that the lawsuit filed by the Plaintiff is inadmissible.
4. Ordering the Respondent in the Review to pay the court costs at all levels of the judiciary, including the costs for the review examination, amounting to Rp10,000,000.00 (ten million rupiah).

The decision that has been presented reveals a legal gap that has not been addressed, specifically regarding the regulation of cases involving similar trademarks that are not of the same type. Based on the aforementioned decision, which relies on Law Number 15 of 2001 that is no longer in effect, the analysis of the legal gap concerning similar trademarks with dissimilar goods will utilize Article 21 of Law Number 20 of 2016 concerning Trademarks and Geographical Indications, which explains that... Therefore, in this research, the author will discuss the legal gap surrounding similar trademarks with dissimilar goods as well as the consequences and efforts to rectify the existing legal gap in the regulation of similar trademarks that are not of the same type.

Previous studies have highlighted the challenges in protecting well-known trademarks, particularly in cases involving similarities between trademarks for non-similar goods. For instance, Jened (2015) discussed the limitations of existing trademark laws in addressing unfair competition and consumer confusion caused by imitative branding. Similarly, Shaleh and Trisnabilah (2020) emphasized the need for more robust legal frameworks to distinguish between similar trademarks in different categories. However, these studies often focus on the general principles of trademark protection, leaving a significant gap in the specific regulations needed to address non-similar trademark similarities.

With globalization and the rapid expansion of international trade, the need for clear and enforceable trademark protection has become more critical than ever. Legal gaps in addressing non-similar trademark similarities not only undermine consumer trust but also enable unscrupulous business practices. These issues highlight the urgency of revising and strengthening legal frameworks to protect intellectual property effectively, ensure fair competition, and safeguard consumer rights.

While prior research has explored the general challenges of trademark infringement and legal protections, limited attention has been paid to the specific issue of non-similar trademarks causing consumer confusion. Existing studies rarely delve into the practical implications of these legal gaps, such as inconsistent judicial decisions and inadequate enforcement mechanisms, leaving a need for more focused analysis and policy recommendations.

This study uniquely examines the issue of non-similar trademark similarities through the lens of consumer protection and legal enforcement. It goes beyond theoretical discussions to provide an empirical analysis of the legal voids in existing trademark regulations, offering specific recommendations for addressing these challenges. By focusing on the intersection of intellectual property law and consumer rights, the study contributes a fresh perspective to the ongoing discourse on trademark protection.

The objective of this research is to identify and analyze the legal gaps related to non-similar trademark similarities, assess their impact on consumer protection and market fairness, and propose regulatory and enforcement measures to address these issues effectively.

The study provides valuable insights for policymakers, legal practitioners, and trademark owners, offering practical solutions to enhance the legal protection of trademarks and prevent consumer confusion. For businesses, it emphasizes the importance of maintaining ethical

branding practices, while for consumers, it underscores their right to receive accurate and trustworthy information about the products they choose.

Strengthening regulations on non-similar trademark similarities will have far-reaching implications, including fostering a more transparent and competitive marketplace, enhancing consumer trust, and promoting innovation among businesses. Clearer legal standards will also improve the consistency of judicial decisions, reduce the risk of exploitation by unethical actors, and contribute to the overall integrity of intellectual property protection in Indonesia.

RESEARCH METHOD

In this research, the research method used is the statutory approach, also known as normative legal research. This involves a process of discovering legal rules, legal principles, and legal doctrines to address legal issues related to the legal gap concerning similar trademarks with dissimilar goods. The research will also discuss the consequences and efforts to rectify the existing legal gap in the regulation of similar trademarks that are not of the same type (Mahmud Marzuki, 2018). The case approach involves analyzing and examining cases to serve as a guide for legal issues. Additionally, the conceptual approach is based on the views and doctrinal patterns or the thoughts of experts that have developed within the field of law. Through various approaches and legal research presented, this study will address the legal gap concerning similar trademarks with dissimilar goods, as well as discuss the consequences and efforts to rectify the existing legal gap in the regulation of similar trademarks that are not of the same type.

RESULTS AND DISCUSSION
Legal Gaps in Similar Trademarks with Dissimilar Goods

Legal protection for intellectual works in the era of globalization has become increasingly important, given the rapid technological advancements that allow for the creation of various intellectual works. Intellectual Property Rights (IPR) violations can manifest as piracy, counterfeiting in the context of copyright and trademarks, as well as patent infringements. Each of these violations clearly results in significant losses for economic actors. Protection of Intellectual Property Rights (IPR) is a crucial concern in many countries, reflected in the establishment of various international conventions. One of the key agreements in this field is the TRIPs Agreement (Trade-Related Aspects of Intellectual Property Rights Including Trade in Counterfeit Goods). The TRIPs Agreement encompasses various categories of protected intellectual works, including: (Sutedi, 2009)
1. Copyrights and Related Rights;
2. Patents;
3. Trademarks;
4. Geographical Indications;
5. Industrial Designs;
6. Protection of Undisclosed Information;
7. Layout Designs of Integrated Circuits;
8. Control of Anti-Competitive Practices in Contractual Licenses.

Indonesia's participation as a member of the World Trade Organization (WTO) and the obligations arising from the TRIPs Agreement have consequences that require Indonesia to align its domestic laws in the field of Intellectual Property Rights (IPR) with the minimum standards set forth in TRIPs. The protection of IPR has become even more important since the agreement reached in the General Agreement on Tariffs and Trade (GATT), which was agreed upon in April 1994 during the Marrakech Conference to be transformed into a global trading system under the WTO. Indonesia's membership in the WTO was ratified through Law Number 7 of 1994 regarding the Ratification of the Agreement Establishing the World Trade Organization. Through this ratification, the Government of Indonesia established several

regulations in the field of Intellectual Property Rights, including Law Number 20 of 2016 concerning the Fifth Amendment to Law Number 15 of 2001 concerning Trademarks, Law Number 13 of 2016 concerning Patents, and Law Number 19 of 2002 concerning Copyright.

According to Article 1 of Law Number 20 of 2016 concerning Trademarks and Geographical Indications, a trademark is a sign that can be presented graphically in the form of images, logos, names, words, letters, numbers, color combinations, in two-dimensional and/or three-dimensional forms, sounds, holograms, or a combination of two or more elements to distinguish goods and/or services produced by individuals or legal entities in the trade of goods and/or services. A Trademark is a mark used on goods sold by individuals, groups, or legal entities to distinguish them from other similar goods. Meanwhile, a Service Mark is a mark applied to services sold by individuals, groups, or legal entities to differentiate those services from other similar services. A Collective Mark, on the other hand, is a mark applied to goods and/or services with similar characteristics sold by several individuals or legal entities collectively, to distinguish them from other similar goods and/or services. According to Article 1 paragraph (5) of Law Number 20 of 2016 concerning Trademarks and Geographical Indications, Trademark Rights are exclusive rights granted by the state to the owners of registered trademarks for a certain period, which grants the owner the right to use the trademark themselves or to permit others to use it. Based on this definition, trademark rights are obtained through a registration process, not from the first use. The system used is a constitutive system, which supports legal certainty. Therefore, these rights are exclusive, and other parties are not permitted to use the same trademark. By registering, the trademark will receive legal protection for individuals or businesses that register it.

The main function of a trademark is to enable consumers to recognize the distinctive features of products (both goods and services) owned by a certain company, thereby distinguishing them from similar or competing products. Consumers who are satisfied with a particular product are likely to purchase or use that product again in the future. To achieve this, it is important for users to easily distinguish between genuine products and other identical or similar products. According to the Directorate General of Intellectual Property of the Ministry of Law and Human Rights of the Republic of Indonesia, in collaboration with the Japan International Cooperation Agency (2007), the use of trademarks has several functions, which are as follows:

1. As an identity to distinguish the products produced by certain individuals, groups, or legal entities from the products of others;
2. As a means of promotion, where a product can be promoted simply by mentioning its brand;
3. As a guarantee of the quality of the products offered;
4. As an indication of the origin of the goods or services produced.

Thus, the main function of a trademark is to enable consumers to recognize the distinctive characteristics of a product (whether goods or services) owned by a company, allowing it to be differentiated from similar or competing products. Consumers who are satisfied with a particular product are likely to purchase or use that product again in the future. To achieve this, users must be able to easily distinguish between genuine products and other identical or similar products. In order to enable companies to differentiate themselves and their products from competitors, trademarks play an important role in the company's image and marketing strategy, while also contributing to the brand and reputation of the product in the eyes of consumers. Consumers often consider emotional factors related to a specific brand, which are based on a range of qualities or features found in that branded product. A trademark can also add value to a company in its efforts to invest in maintaining and improving the quality of its products. This is done to ensure that the product's brand has a good reputation. The level of popularity or brand recognition can be classified into three categories:

1. A normal mark (ordinary mark) is a trademark that does not have a high reputation or strong

symbolic influence in lifestyle, either in terms of usage or technology. Consumers generally perceive its quality as lower, less efficient, and less appealing in design. The choice to purchase products with this brand usually comes last, even though its price is relatively low compared to similar products.

2. A well-known mark has a high reputation and is the preferred choice for consumers across various demographics. This brand has strong appeal and image, creating emotional closeness (familiar attachment) and symbolic bonds (mythical context) that make it favored by all consumer layers.

3. At the highest level, there exist famous marks, which are internationally recognized and classified as the "aristocrat brands of the world." These brands have an outstanding reputation that surpasses well-known marks, thus they are also referred to as "highly renowned" or "superlative" among well-known marks.

Marks that cannot be used or registered include several categories, namely those that conflict with morality and public order. Signs that violate morals and public order are not acceptable as marks. Such marks must not contain paintings, images, or words that conflict with good moral standards and public order. Illustrations that do not meet these norms or words that are considered inappropriate may offend feelings, decorum, tranquility, or religious aspects, both for the general public and certain community groups. Signs that lack distinctiveness or are deemed weak in terms of differentiation cannot be considered marks. Generic signs, which are widely recognized and used in the community, can no longer function as identifiers for specific individuals. Misleading descriptions, marks that contain elements that could mislead the public about the origin, quality, type, size, or intended use of goods or services, are not acceptable. Marks that contain information inconsistent with the quality or benefits of the produced goods and services also cannot be registered. Protected plant variety names cannot be registered as marks for similar goods or services. The rejection of trademark registration applications that use protected plant variety names is because the name is related to the goods and services for which registration is being sought. Thus, plant variety names are considered generic or descriptive terms for certain goods and services, lacking the ability to distinguish one product from another.

Regarding the Supreme Court ruling No. 29 PK/Pdt.Sus-HKI/2016, in deciding the case, the judge's considerations referenced Article 4 of Law No. 15 of 2001, which defines a good faith applicant as one who registers their mark in a proper and honest manner, without intending to ride on, imitate, or plagiarize the fame of another party's mark. The applicant must not create unhealthy business competition or deceive and mislead consumers. For example, if there is a trademark X that has been widely recognized by the public for years and is then imitated to the extent that it has substantial or overall similarities to trademark X, this reflects the bad faith of the imitator. In this situation, there is an element of intent that is evident in the imitation of the well-known trademark.

In this case, there is clear bad faith by the defendant to exploit the fame of the plaintiff's BMW mark. This can be evidenced by the name, pronunciation, and logo design of the defendant's BMW mark, which bear substantial similarities to the plaintiff's BMW mark. Thus, there is an impression of a connection between the plaintiff's BMW mark and the defendant's mark, which could mislead consumers. The absence of government regulations (PP) governing substantial or overall similarities with well-known marks for non-similar goods and/or services during the pending trial created legal uncertainty for the holders of well-known marks. Moreover, due to the absence of regulations at that time, the judge was inconsistent in deciding cases related to marks.

The issue of legal void regarding more specific regulations in government regulations (PP) about substantial similarities or overall well-known marks of non-similar goods has not been addressed in Law No. 15 of 2001 on Marks. This impacts the Supreme Court ruling No.

29 PK/Pdt.Sus-HKI/2016, which has final legal force with a ruling stating the case is inadmissible. Regarding this ruling, there are no legal consequences on the ownership status of the object of the case, meaning the plaintiff cannot cancel the defendant's BMW mark. Therefore, the defendant is still allowed to use the mark. As a consequence, the disputed object does not change status, and the legal positions of the parties remain the same as before the trademark dispute occurred.

The impact of the legal void regarding the similarity of non-similar goods marks on consumers is the emergence of consumer confusion, which is a common negative effect arising from products or services bearing marks that closely resemble those of already famous brands. When consumers are faced with various marks that appear similar, they may struggle to distinguish genuine products from counterfeits. This situation not only confuses but may also lead to uncertainty in purchasing decisions. When consumers cannot clearly recognize the products they choose, this can lead to frustration and confusion that ultimately harms their experience as buyers.

This confusion often results in a decline in consumer trust in existing brands in the market. If consumers feel uncertain about the authenticity of a product, they may begin to question the quality and reputation of that brand. In a world where brand reputation is crucial for success, this loss of trust can have serious long-term consequences. Consumers who were previously loyal to a particular brand may switch to other products or choose not to purchase at all if they feel they cannot distinguish between high-quality and low-quality products. Consumer confusion not only affects individual purchasing decisions but can also undermine the brand ecosystem as a whole. When a well-known brand loses recognition in the market due to the existence of similar counterfeit brands, this can negatively impact the brand's image and customer loyalty. Consumers may start to assess brand quality more skeptically, leading to poor business decisions for legitimate brand owners. They may have to invest more in marketing campaigns to regain trust and rebuild their brand image.

Consequences and Efforts to Address the Legal Gaps in Regulations Regarding Similar Non-Similar Trademarks

Legal uncertainty regarding the protection of well-known trademarks refers to situations where trademark owners lack assurance that their rights will be consistently recognized and protected by the law. This often occurs when existing regulations do not clearly address the issue of trademark similarity, especially in the context of non-similar trademarks. This uncertainty can lead to hesitation for trademark owners in taking legal action to protect their trademarks from infringement or unauthorized use. Well-known trademark owners often invest heavily in creating and maintaining their brand image in the market. However, when there are legal gaps, they may feel reluctant to enforce their rights due to the uncertainty about how the law will handle cases of infringement involving similar trademarks. For example, if a new trademark emerges in the market with a logo or name that is nearly identical, the well-known trademark owner may be unsure if they have the right to sue, especially if the products fall into different categories. This uncertainty can result in inaction, which, in turn, could lead to financial and reputational losses.

This legal uncertainty can also be exploited by irresponsible business actors. They might intentionally create brands similar to well-known trademarks to attract consumers, hoping to gain profits from the fame of those brands without clear legal consequences. This creates conditions of unhealthy competition and undermines consumer trust in existing brands. As a result, consumers may feel confused and struggle to differentiate between genuine and counterfeit products, potentially diminishing their loyalty to already known brands. Thus, the legal uncertainty in the protection of well-known trademarks not only impacts the trademark owners but also affects market dynamics as a whole. To address this issue, it is essential to promptly revise existing regulations and provide greater clarity about the rights of trademark

owners. With appropriate measures, it is expected that a more stable and secure legal environment will be created for trademark owners, enabling them to enforce their rights without doubt.

Unhealthy competition is a common phenomenon in the context of trademark protection, especially when legal gaps allow business actors to create brands similar to well-known trademarks. When regulations regarding trademarks are not sufficiently strict or clear, irresponsible individuals or companies can exploit this situation for their own gain. They may design brands that are almost identical to well-known brands, aiming to attract consumer attention and achieve financial profit without making the same investment in product quality or reputation.

Such practices can lead to consumer confusion. When a new brand resembling a well-known trademark appears in the market, consumers might unknowingly choose counterfeit products, which often offer inferior quality. This not only harms consumers in terms of product quality but also erodes their trust in the brands they have known and trusted. In the long run, these negative impacts can affect consumer behavior and tarnish the brand image that has been painstakingly built by original trademark owners. The practice of creating similar brands can financially harm original trademark owners. Those who have invested in building their brand and reputation risk losing market share when consumers switch to similar counterfeit products. These losses are not only financial but can also damage the long-term relationship between trademark owners and their consumers. Legitimate trademark owners may face high legal costs to enforce their rights, while they also need to spend additional funds on marketing campaigns to clarify the differences between their products and those that imitate them.

The challenges in enforcing trademark law regarding infringements is a significant issue faced by trademark owners in Indonesia. Trademark infringement cases often result in lengthy and complex legal processes, which not only drain resources but also create uncertainty for the involved parties. Litigation processes can take years, and during this period, infringements of registered trademark rights can continue. This situation worsens problems for legitimate trademark owners, who must face the reality that although they possess clear legal rights, they may not be able to enforce them quickly and effectively.

One factor exacerbating these challenges is the presence of regulatory gaps governing trademark infringement, particularly concerning non-similar trademarks. Ambiguity in regulations can lead to confusion among law enforcement officials, judges, and other related parties about how to handle these infringement cases. In some instances, the lack of clear guidelines on how to assess the similarity between different trademarks can result in inconsistent decisions in court. This not only creates legal uncertainty for trademark owners but also allows unscrupulous business actors to exploit these gaps.

The lengthy and uncertain legal process can also serve as a barrier for trademark owners in continuing their businesses. Many trademark owners, particularly small and medium enterprises, may feel that the costs and time required to pursue justice do not outweigh the potential benefits. This may lead them to opt not to take legal action at all, ultimately harming themselves and allowing infringers to operate without consequences. In this context, it is important for the government to strengthen the existing legal and regulatory systems, enabling trademark owners to enforce their rights more efficiently and effectively.

The issuance of Government Regulations (PP) that clearly govern substantial or overall similarities with well-known marks for non-similar goods and/or services is crucial within the context of intellectual property rights protection in Indonesia. With clear regulations, well-known trademark owners will have a strong legal basis to protect their trademarks from infringement. These regulations will not only provide legal certainty but also create clarity in trademark rights enforcement, which has long been one of the major challenges for trademark owners in a competitive market. One of the main advantages of this PP is the establishment of

clear standards regarding what is meant by "substantial similarity" between different trademarks. With precise definitions, it will be easier for law enforcement officials to assess cases of trademark infringement. This will reduce the confusion that often occurs in court and among legal practitioners, as well as provide consistency in the decisions made by judges. When all parties have a shared understanding of the boundaries and criteria for trademark assessment, the litigation process will be more efficient and fair for all involved.

Clear government regulations can also serve as a deterrent for irresponsible business actors. With strict regulations in place, there will be greater awareness among business actors about the legal risks they may face should they try to imitate well-known trademarks. This will help maintain market integrity and reduce unhealthy competitive practices. When business actors understand that there are real consequences for their actions, they will be more likely to respect the intellectual property rights of others. Good regulation in the PP can enhance consumer trust in established brands. When consumers know that there is strong legal protection for well-known trademarks, they will feel safer making purchases. This trust is crucial in maintaining consumer loyalty and encouraging market growth. In other words, clear regulations not only protect trademark owners but also contribute to a broader economic health by promoting innovation, product quality, and healthy competition in the market. Therefore, it is important for the government to promptly issue this PP so that the trademark protection ecosystem in Indonesia can function effectively.

Reforming Law No. 20 of 2016 on Trademarks and Geographical Indications is an important step to enhance the protection of well-known trademarks in Indonesia. One aspect that needs attention in this revision is the addition of more detailed provisions regarding the protection of well-known trademarks, especially in the context of non-similar trademarks. Currently, legal gaps still exist that can be exploited by irresponsible business actors, rendering protection for well-known trademark owners suboptimal.

By clarifying the definitions and criteria for non-similar trademarks, this revision will aid in accurately identifying and assessing trademark infringement cases. For example, determining clear criteria regarding how similar two trademarks are in terms of visual elements, fonts, and pronunciation will facilitate law enforcement officials and judges in making fair decisions. When these criteria are enshrined in the law, there will be clear guidance for all parties to understand the existing boundaries, thereby reducing the confusion that has previously occurred in law enforcement.

This law reform will provide a stronger legal basis for well-known trademark owners to assert their rights. In many cases, the ambiguity regarding what constitutes trademark infringement leaves owners feeling powerless to take action. With clearer provisions, trademark owners will feel more confident in protecting their rights, whether through negotiation or litigation. This will not only strengthen their legal position but also encourage business actors to respect the intellectual property rights of others. The reform of the Trademark Law can also contribute to increased investment in the business sector. When a clearer and supportive legal environment is established, investors will be more confident in investing in established and growing brands. This will foster innovation and healthy competition, thereby enhancing the quality of products and services in the market. Consequently, improvements in this law will not only benefit trademark owners but also provide broader benefits for the national economy.

CONCLUSION

Legal protection for Intellectual Property Rights (IPR) is crucial in facing the challenges brought about by globalization and rapid technological advancements. Infringements of IPR, which often manifest as piracy, counterfeiting, and patent violations, can result in significant losses for economic actors. Therefore, it is important to strengthen regulations and policies that protect intellectual works, particularly in the context of well-known trademarks. The TRIPS Agreement serves as an important foundation for member countries, including Indonesia, to align domestic laws with international IPR protection standards. In this context, the existence of Government Regulation (PP) that specifically governs the substantial similarity of well-known trademarks, especially for non-similar goods and services, becomes urgent. Without clear regulations, legal uncertainty arises, which can lead to inconsistent legal decisions and reduce protection for well-known trademark owners. Consumer confusion due to similar branded products or services also highlights the need for better protection of well-known trademarks. This confusion not only harms consumer experience but can also diminish trust in established brands in the market. This uncertainty has the potential to damage brand reputation and customer loyalty, forcing trademark owners to invest more resources in efforts to restore their brand image.

Legal uncertainty in the protection of well-known trademarks can harm both trademark owners and consumers. Well-known trademark owners often face challenges in enforcing their rights, particularly against infringements from similar yet non-similar trademarks. Legal gaps and ambiguities in regulations lead to confusion among law enforcement officials, which can ultimately trigger unhealthy competitive practices. Reforming Law No. 20 of 2016 on Trademarks and Geographical Indications is essential to provide optimal protection for well-known trademarks. Adding more detailed and clear provisions regarding non-similar trademarks will aid in assessing infringement cases and provide a stronger legal basis for trademark owners to protect their rights. With the establishment of firm and consistent regulations, it is hoped that a more stable legal environment will be created, boosting consumer confidence and encouraging healthy market growth.

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Model for Improving the Financial Management Performance of West Papua Province Based on Competence, Accountability, Organizational Commitment, and Quality of Supervision

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KEYWORDS	ABSTRACT
HR competence, accountability, organizational commitment, quality of supervision, performance of regional financial management	This study aims to analyze the model of improving Regional Financial Management in West Papua Province based on competence, accountability, organizational commitment and supervisory quality. This study uses a quantitative approach, aiming to test hypotheses, establish facts, describe correlations between variables, offer statistical descriptions, estimate, and forecast results. The population of this study is 5,186 people. The results of the study show that: (1) Human resource competence, accountability and organizational commitment have a positive and significant effect on the quality of supervision, (2) Human resource competence, accountability and organizational commitment have a positive and significant effect on the performance of regional financial management, (3) The quality of supervision has a positive and significant effect on the performance of regional financial management, (4) Human resource competence, accountability and organizational commitment have a significant indirect effect to the performance of regional financial management mediated by the quality of supervision. The higher the competence, accountability and commitment of the organization, the higher the performance of regional financial management mediated by the quality of supervision.

INTRODUCTION

The issue of local government financial performance today is in the public spotlight because it has not shown good results and cannot be felt directly by the people. The people demand that local governments have good financial performance in carrying out their duties and responsibilities as a manifestation of the concept of regional autonomy. said that: "performance itself is the ability to work as shown by the results of work". The government is said to have good financial performance if the government is able to manage the government so that it can provide welfare to the community as a whole. The demand for good financial performance occurs in all local governments, including the West Papua Provincial Government, in line with the implementation of regional autonomy through Law Number 23 of 2014 concerning Regional Government (Mahsun, 2006).

According to , financial performance is the output or result of activities or programs that are achieved in accordance with the budget with measurable quality and quantity. Financial performance measurement has many goals, not least to increase local government accountability and public transparency. In addition, the measurement of government financial performance will be useful in terms of making policies in regional financial management. Government financial performance is also referred to as the result of a financial management system regarding the level of achievement of goals or objectives of government agencies as an

elaboration of the vision, mission and strategy of government agencies that indicate the level of success and failure in the implementation of activities in accordance with established programs and policies (Ronald & Sarmiyatiningsih, 2010).

Regional financial management regulated in Government Regulation No. 12 of 2019 states that regional financial management is the entire series of activities including the process of planning, implementation, administration, reporting, accountability, and supervision of regional finances. In addition, according to the regional financial management is part of the state financial management system and part of the main elements in the implementation of local government. Regional financial management is a series of activities that are organized systematically, consisting of planning, implementation, administration, reporting, accountability and supervision of regional finances (Halim & Iqbal, 2012; Renyowijoyo, 2013).

The most important thing at this time is how local governments, including the West Papua Provincial Government, can pay greater attention to the performance of regional financial management. Regional financial management that is carried out economically, efficiently, and effectively or meets the principles of value for money as well as participation, transparency, accountability and justice will be able to encourage economic growth and independence of a region. Thus, an area whose financial performance is declared good means that the region has the financial ability to finance the implementation of regional autonomy.

(Rahmawati & Putra, 2016) said that regional financial performance is the potential possessed by a region to explore, manage and utilize the original financial resources of the region itself, thereby supporting the implementation of the government system, providing services to the community and carrying out development in a region and by not relying entirely on the Central Government for full freedom in using/utilizing funds for the benefit of the community areas within the limits that have been determined in the laws and regulations. According to , performance indicators are a measurement tool that is usually used to determine how successful an organization is in achieving the expected goals. (Pratolo et al., 2019)

Efforts to improve the performance of regional financial management require good human resource competence, including knowledge, skills and attitudes. In an organization, the need for superior and professional human resource competencies is absolutely necessary. According to competence, it is defined as a person's ability in certain fields such as verbal communication, percentage skills, technical knowledge, the ability to manage work pressure, and the ability to make plans and decisions (Rafar et al., 2015). According to Spencer and Spencer (in competence is a part of personality that is deep and attached to a person as well as a behavior that is predicted in various circumstances and job duties (Sutrisno, 2015).

Competence refers to the characteristics underlying behavior that describe motives, personal characteristics (characteristics), self-concept, values, knowledge or knowledge that a person who performs well (Spencer and Spencer in). Human resource competence is the level of skills, knowledge, and behavior possessed by individuals to perform their duties in an organization. Meanwhile, it reveals that human resource competence is the ability that a person has related to knowledge, skills, and personality characteristics that directly affect performance that can achieve the desired goals (Aji Wibowo, 2022; Palan, 2007; Sudiarti, 2024).

According to (Ghartey, 1990), "accountability is shown to seek answers to questions related to what services, by whom, to whom, and how." In the context of government organizations, accountability is the provision of information and disclosure of government activities and financial performance to parties interested in the report. produced findings that the application of accountability in regional financial management is able to improve performance The implementation of accountability is expected to be able to increase supervision of local government financial management (Ghartey, 1990; Ismiarti, 2013). Therefore, accountability is a must that must be implemented by the government, this is

because accountability is a mandate of laws and regulations that must be carried out by the government in the implementation of regional financial management.

Organizational commitment also has an impact on improving regional financial management performance. (Mowday et al., 2013) argues that organizational commitment is the identification of a person who is relatively strong in involvement in the organization and is willing to work hard to achieve organizational goals. said that organizational commitment is a strong desire to become a member of a certain organization. Organizational commitment is also the desire to achieve a high level of expertise on behalf of the organization, a firm trust, and acceptance of the organization's values and goals (Luthans & Youssef, 2017).

The performance of regional financial management will of course be better if it is supported by good quality supervision. The quality of supervision of regional financial management is very important, because supervision is an effort to ensure harmony between the implementation of government tasks in the region or the central government and ensure the smooth implementation of government. One of the important elements of the realization of (Halim & Iqbal, 2007) Good Corporate Governance (GCG) is good budget management. In order for budget management to run well and on target, supervision is formed from direct superiors and legislative bodies and supervisory institutions that specifically regulate budget planning and implementation. The existence of supervision will make the budget planning prepared will run efficiently, effectively and economically.

The competence of human resources in the Regional Apparatus of West Papua Province is currently still low, not fully able to abandon the old way of thinking. This phenomenon can be seen from the lack of courage of the regional apparatus to make decisions, even though it is within their sphere of power. The habit of asking for implementation instructions is something very common that becomes a daily scene. As a result, the regional budget process with the old paradigm tends to be more centralized. Budget planning is dominated and intervened by the central government in order to accommodate the interests of the central government in the regions. Policies taken by local governments only follow instructions from the central government.

The West Papua Provincial Government is currently not able to manage its regional finances perfectly, this can be seen from two cases. First, the revenue aspect has not been able to optimize its potential because local governments are still not able to be independent. In addition, its financial income still depends on the central government. The second case is from the aspect of expenditure which is still not able to manage its expenditure properly because most of the funds are spent on employee expenditure rather than capital expenditure. This condition illustrates that the problem of regional financial management performance is still not fully implemented. This shows that the hope to create regional financial management performance in the Regional Apparatus of West Papua Province is not in accordance with the reality or objective conditions that exist in West Papua Province, so there is a gap between expectations and the current reality. This condition is the gap or gap phenomenon of this study, which needs to be studied and found to be solved.

From the results of an empirical study of previous research, it has been stated that improving the performance of regional financial management can be done by paying attention to various aspects, namely human resource competence, accountability, organizational commitment and the quality of supervision. In his research, he found that competence has a significant impact on supervision and with good supervision, the results of the work will be in accordance with expectations. Research shows that HR competencies have a significant impact on financial management performance. Even in research conducted by and revealed that if employees have good competence, it will affect the effectiveness in regional financial management. With the higher the competence possessed by human resources, the performance of regional financial management in SKPD will be better; (Kaunang, 2020; Putri et al., 2019;

Rafar et al., 2015; Raza et al., 2022; Riyanti & Efni, 2020; Safwan & Abdullah, 2014; Sari et al., 2017; Tambing et al., 2020).

(Merry & Syarief, 2017) In his research, he found that organizational commitment is also an important part of improving performance. Even referring to the research conducted; Where with a high commitment, this will affect financial performance. Next (Chun et al., 2013; Jitmau et al., 2017; Rashid et al., 2003; Shara et al., 2019; Silfiani et al., 2021) In his research, he revealed that better organizational commitment will encourage better regional financial management performance. which in his study revealed that accountability does not significantly affect the performance of local governments. Then, it was also found that accountability did not significantly affect the government's performance in managing regional finances (Astuti, 2013).

Research states that commitment does not affect the ability to prepare financial statements because the relevant employees have not been able to spend additional physical, mental and spiritual resources in carrying out their own duties. Then, it was revealed that organizational commitment did not have a significant effect on the financial performance of local governments. The research gap of this study is located, where there is a researcher who explains that there is an influence of this research variable and there are research results that explain that there is no influence between the same variables. This is the novelty in this study. Therefore, it is hoped that this research can produce a new idea and concept related to improving the performance of regional financial management.

Based on the description of the background and several previous studies that have been presented, the formulation of the problem of this research is whether: 1) Human resource competence, accountability and organizational commitment affect the quality of supervision, 2) Human resource competence, accountability and organizational commitment affect the performance of regional financial management, 3) The quality of supervision affects the performance of regional financial management, 4) Human resource competence, accountability and organizational commitment affect the performance of regional financial management mediated by the quality of supervision.

Literature Review
Human Resource Competencies

According to Spencer and Spencer (in, (Moeheriono, 2010) a competency is an underlying characteristic of an individual that is causally related to criterian referenced effective and or superior performance in a job situation". " Competence is the underlying characteristic of a person related to the effectiveness of an individual's performance in his or her work or the basic characteristics of an individual that have a causal relationship or as a causal relationship with the criteria that are used as a reference, effective or perform well or superior in the workplace or in a certain situation".

According to Mc. Clelland (in, human resource competence is a fundamental characteristic that a person has that directly influences or can predict excellent performance". In other words, competence is what outstanding performers do more often, in more situations, with better results, than what policy appraisers do (Sedarmayanti & Safer, 2016). Mc.Clelland provides an overview that simplifies the understanding of these competencies, namely as a concept of a combination of skills, personal attributes, and knowledge that is reflected through performance behavior (job behaviour), that can be observed, measured and evaluated. According to Armstrong and Baron (in), competence is a behavioral dimension that is behind competent performance. (Wibowo, 2018)

According to (Edy, 2016) stated that competency is an ability based on skills and knowledge supported by work attitudes from its application in carrying out tasks and work in the workplace that refer to the set work requirements. Competence as a person's ability to

produce at a satisfactory level in the workplace includes a person's ability to transfer and apply those skills and knowledge in new situations and increase the agreed benefits.

Accountability

Accountability is a form of obligation for public activity organizers to be able to explain and answer all matters related to the steps, all decisions and processes carried out, as well as accountability for their results and performance. According to "Accountability is a form of obligation of providers of public activities to be able to explain and answer all matters regarding the steps of all decisions and processes carried out, as well as accountability for the results of their performance". (Tharis et al., 2022)

According to accountability, it is the obligation to provide accountability and explain the performance and actions of a person, legal entity or organizational leader to other parties who have the right and obligation to ask for accountability and information." Meanwhile, Accountability is "the obligation of the (Government) Agent to manage resources, report, and disclose, all activities and activities related to the use of public resources to the mandate giver." gave his view that accountability is "the obligation to convey accountability or to answer, explain, and act of a person or legal entity and collective or organizational leadership to a party that has the right or authority to ask for information or accountability.

According to Accountability, it is the embodiment of the obligation to account for the success or failure of the implementation of the organization's mission in achieving the goals and objectives that have been set through a periodic accountability medium. According to accountability, it is responsible for the management of resources and the implementation of policies entrusted to reporting entities in achieving goals that have been set periodically."

Organizational Commitment

In general, organizational commitment as a psychological relationship between employees and their organizations, organizational commitment has been found to be related to the main work outcomes, namely the intention to leave or enter employees and the processes that actually occur. (Kreitner, 2003) states that organizational commitment is the degree at which an employee identifies with the organization and wants to continue actively participating in it.

According to organizational commitment, it is a measure of the willingness of employees to stay with a company in the future. Commitment often reflects the employee's confidence in the organization's mission and goals, willingness to put in the effort to get the job done, and a desire to continue working there. Kreitner and Kinicki (in) state that organizational commitment reflects how an individual identifies himself with the organization and is bound to its goals.

(Miller, 2003) Stating that organizational commitment is a condition of an employee identifying with a particular organization and its goals and wanting to maintain membership in the organization. Organizational commitment can be seen from the assessment of the conformity between a person's values and beliefs and the values of the organization. According to, organizational commitment can be characterized by the willingness of employees to contribute so that they can achieve organizational goals and when employees feel confident that they will learn and develop with current entrepreneurs, their level of commitment to stay in the organization is much higher.

Quality of Supervision

(Wiguna et al., 2015) In his research, he views that regional financial supervision is the most important element in improving the performance of local governments, so that the tasks that are the main tasks of each Regional Apparatus Work Unit (SKPD) do not deviate or minimize errors from the tasks that have become their responsibility. When associated with the theory that is put forward, good supervision is when there are observation activities carried out

on all activities carried out by the organization so that there is a guarantee that the work done is believed to be in line with Planning beginning.

According to (Siagian, 2014), supervision can be formulated as a process of activities that are carried out continuously or continuously to observe, understand, and assess each implementation of certain activities so that they can prevent or correct errors or irregularities that occur. stated that supervision is all activities and actions to ensure that the implementation of an activity does not deviate from the goals and plans that have been outlined. Supervision of the implementation of local government is a process of activities aimed at ensuring that local governments run efficiently and effectively in accordance with plans and provisions of laws and regulations".

(Siagian, 2014) He said that supervision is an observation process of the implementation of all organizational activities to ensure that all work that is being carried out runs according to the predetermined plan. Saydam (in explaining that quality supervision is a managerial activity, carried out with the intention that there are no irregularities in carrying out work. Whether or not an irregularity or error occurs during the implementation of work depends on the ability and skill of the employee.

Regional Financial Management Performance

Mamesah stated that the definition of regional finance is as all rights and obligations that can be valued in money, as well as everything in the form of money and goods that can be used as regional wealth as long as it has not been owned/controlled by a higher state or region and other parties in accordance with the provisions / applicable laws and regulations". Halim & M. Syam Kusufi, 2013

Article 1 (6) of Government Regulation of the Republic of Indonesia No. 58 of 2005 is explained: "Regional financial management is the entire activity which includes planning, implementation, administration, reporting, accountability and supervision of regional finances". Article 4 (1) of Government Regulation No. 58 of 2005 reads: "The principles of regional financial management are carried out in an orderly, economical, effective, efficient, transparent and responsible manner by paying attention to the principles of justice and benefits for the community".

According to, "Regional financial management consists of general management and special management. General management is related to the APBD, while special management is related to regional inventory goods". The implementation of local government functions will be carried out optimally if the implementation of government affairs is followed by the provision of sufficient sources of revenue to the regions, by referring to the law on financial balance between the central and regional governments which is adjusted and harmonized with the division of authority between the central and regional governments.

RESEARCH METHOD

In this study, the approach used is a quantitative approach. This approach relies more on numbers in the form of scores as the basic framework of analysis. The score was obtained by the survey method. The population in this study is 5,186 employees at the Regional Apparatus of West Papua Province. The determination of the sample used opinions, so that a sample of 216 respondents was obtained, divided proportionally for 5 Regional Apparatus, so that each regional apparatus was sampled as many as 41 people. Data collection using questionnaires and hypothesis testing using SEM-AMOS analysis (Hair, 2019).

RESULTS AND DISCUSSION
Research Validity Test

Based on the results of the validity test, a correlation number (Rcal) was obtained which was greater than the required table r, which was 0.138. The Correction Value of the

Total Correlation Item variable (Rcal) of the Human Resources Competency Aspect (X1) is between 0.628 - 847. The results show that the value of Rcal > 0.138 (Rtable), thus indicating that all statement items on the questionnaire questionnaire are valid or able to reveal something that will be measured by the questionnaire, so that it can be used for further analysis.

Research Reliability Test

A variable is said to be reliable if it gives a Cronbach Alpha value > 0.60 (Ghozali, 2006). The Alpha value of > 60% indicates that there are some respondents who answered inconsistently should be removed from the analysis and Alpha will increase. Based on the results of the reliability test of the variables of HR competency aspects Accountability, organizational commitment, quality of supervision and regional financial management performance in table 1 produced an alpha coefficient (Cronbach's Alpha) > 0.60 so that it can be concluded that the instrument used is reliable, meaning that the instrument used has a good level of consistency in producing the measured score.

Table 1. Result 1. Reliability Test of Research Variables

It	Variable	Crombach's Alpha Values	Cut-Off Value	Results of Analysis
1	Aspects of HR Competencies	0.815	0.60	Reliable
2	Accountability	0.861	0.60	Reliable
3	Organizational Commitment	0.860	0.60	Reliable
4	Quality of Supervision	0.854	0.60	Reliable
5	Regional Financial Management Performance	0.850	0.60	Reliable

Primary data sources processed by SPSS 25, 2023

Structural Assumption Test Equation Model (SEM)

Reliability and Variance Extracted Test

Based on the results of the reliability calculation, it was shown that the construct reliability variables of Competency Aspect of 0.929, Accountability Aspect 0.918, Organizational Commitment Aspect 0.936, Quality of Supervision 0.931 and Regional Financial Management Performance of 0.928 met the criteria for the cut off value of >0.70. Likewise, the variance extracted value of the latent variables Competency Aspect is 0.723, Accountability Aspect is 0.653, Organizational Commitment Aspect is 0.708, Supervision Quality is 0.692 and Regional Financial Management Performance is 0.684 meets the cut off value of >0.50. So it can be concluded that each latent variable meets the reliability criteria.

Data Normality Test

The results of the normaliotas data test show that the Critical Ratio (CR) value in each indicator, both in the skewness value and the kurtosis value, has a CR value in the range of ±2.58 so that all normal indicators are univariate. Meanwhile, the value of the multivariate critical ratio was 21,095 and the CR was 4,042. This value is still outside the normal multivariate criterion ±2.58, which indicates that the data is not normal multivariate. If a significance level of 5% is used, the CR value between ±1.96 is said to be a normal distributed data in univariate or multivariate, while at the 1% significance level the CR value is between ±2.58. if the CR value is within this limit, then it can be said that the data is on a normal indicator.

Confirmatory Factor Analysis (CFA) Model

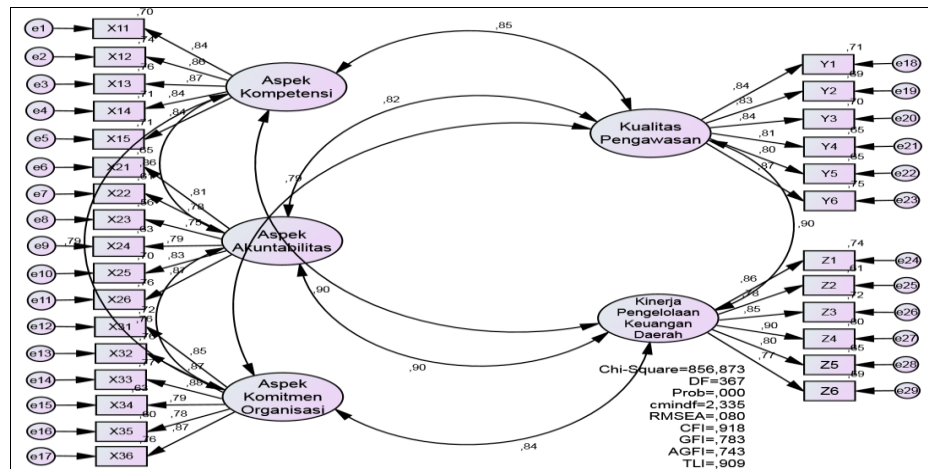The full results are presented in the CFA model) below.

Figure 1. Model Confirmatory Factor Analysis
Primary data sources processed by AMOS, 2023

The Confirmatory Factor Analysis (CFA) Model above shows that the model produces a chi-square value of 856.873, probability (p) 0.000, cmin/df 2.335, RMSEA of 0.080, CFI 0.918, GFI 0.783, AGFI 0.743 and TLI 0.909 so it can be said that the model is not yet fit. From the Confirmatory Factor Analysis (CFA) model, an estimated correlation value between latent variables was produced, which in detail showed that the estimated value of correlation between latent variables Aspects of Competence, Accountability, Organizational Commitment, Quality of Supervision and Regional Financial Management Performance, each had a value of (p) 0.000 < 0.05, meaning that the correlation between latent variables was significant. From these results, structural model testing can be carried out in accordance with the hypothesis that has been developed.

Structural Equation Model

The results of the CFA test show that the model is acceptable because it meets the required criteria. Then from the CFA model it was developed into a structural model according to the hypothesis and model developed in this study. The results of the structural model are presented in the following figure.
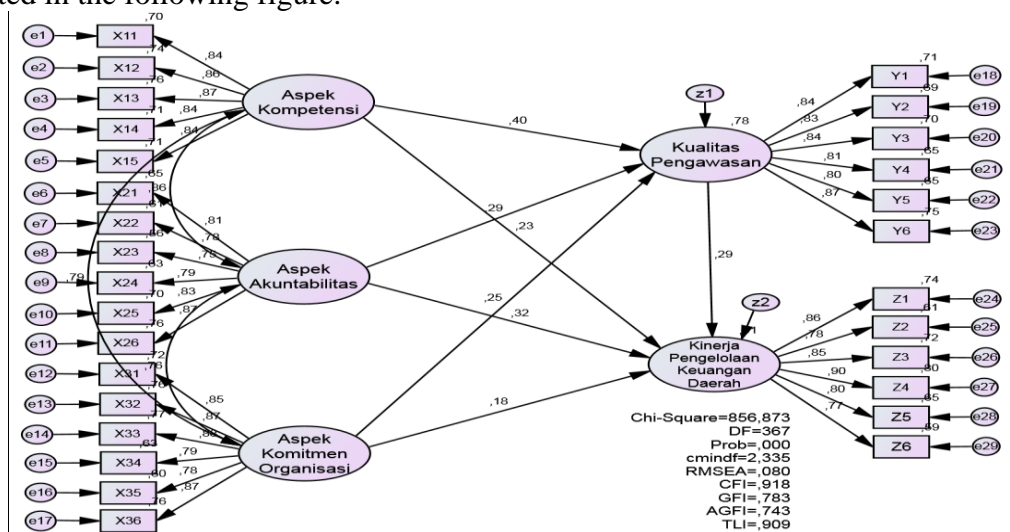

Figure 2. Structural Model 1
Primary data sources processed by AMOS, 2023

In the CFA model above, it shows that the model produces a chi-square value of 856,873, probability (p) 0.000, cmin/df 2,335, RMSEA of 0.080, CFI 0.918, GFI 0.783, AGFI 0.743 and TLI 0.909 so it can be said that the model is not yet fit because the chi-square value is still high. The results of the model after modification by correlating the full indicator error are presented in the following figure.
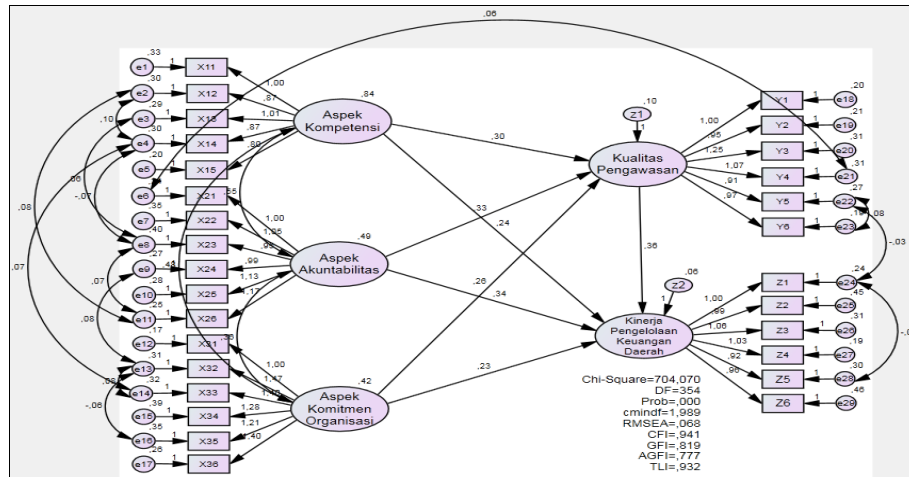

Figure 3. Structural Model 2
Primary data sources processed by AMOS, 2023

Hypothesis Test

From the results of data processing, it can be known the magnitude of the relationship of exogenous variables to endogenous variables, both direct relationships, indirect relationships, and total relationships tested by looking at the level of significance using the Critical Ratio (CR) or (t-calculus) value. The relationship is said to have a significant effect if it meets the requirements, namely having a Critical Ratio (CR) value (t-calculus) ≥ 1.96 or having a p-value value ≤ 0.05.

Table 2. Regression Weight Full Model Hypothesis Testing

It	Direct influence			Estimate	S.E.	C.R.	P	Information
1	Aspects Competence	--->	Quality Supervision	0,298	0,084	3,546	0,000	Significant
2	Aspects Accountability	--->	Quality Supervision	0,334	0,101	3,321	0,000	Significant
3	Commitment Aspect Organization	--->	Quality Supervision	0,264	0,088	2,983	0,003	Significant
4	Aspects Competency	--->	Management Performance Regional Finance	0,240	0,080	2,986	0,003	Significant
5	Aspects Accountability	--->	Management Performance Regional Finance	0,339	0,097	3,502	0,000	Significant
6	Aspects Organizational Commitment	--->	Management Performance Regional Finance	0,226	0,082	2,758	0,006	Significant

It	Direct influence		Estimate	S.E.	C.R.	P	Information
7	Quality of Supervision --->	Regional Financial Management Performance	0,357	0,099	3,592	0,000	Significant

Primary data sources processed by AMOS, 2023

Hypothesis 1: The results of the statistical test provide the results of the estimated value of the influence of Competence on the quality of supervision of 0.298, the CR value of 3.546 and the p-value of 0.000. Based on these results, because the p-value is 0.000 < 0.05 and the CR value is 3.546 > 1.96, it can be concluded that competence has a positive and significant effect on the quality of supervision.

Hypothesis 2: The results of statistical testing provide the results of the estimated value of the influence of accountability on the quality of supervision of 0.334, CR value of 3.321 and p-value of 0.000. Based on these results, because the p-value is 0.000 < 0.05 and the CR value is 3,321 > 1.96, it can be concluded that accountability has a positive and significant effect on the quality of supervision.

Hypothesis 3: The results of statistical testing provide the results of the estimated value of the influence of organizational commitment on the quality of supervision of 0.264, CR value of 2.983 and p-value of 0.003. Based on these results, because the p-value is 0.003 < 0.05 and the CR value is 2.983 > 1.96, it can be concluded that organizational commitment has a positive and significant effect on the quality of supervision.

Hypothesis 4: The results of statistical testing provide the results of the estimated value of the influence of competence on the performance of regional financial management of 0.240, CR value 2.986 and p-value 0.003. Based on these results, because the p-value is 0.003 < 0.05 and the CR value is 2.986 > 1.96, it can be concluded that competence has a positive and significant effect on the performance of regional financial management.

Hypothesis 5: The results of statistical testing provide the results of the estimated value of the influence of accountability on the performance of regional financial management of 0.339, CR value 3.502 and p-value 0.000. Based on these results, because the p-value is 0.000 < 0.05 and the CR value is 3.502 > 1.96, it can be concluded that accountability has a positive and significant effect on the performance of regional financial management.

Hypothesis 6: The results of statistical testing provide the results of the estimated value of the influence of organizational commitment on the performance of regional financial management of 0.226, CR value 2.758 and p-value 0.006. Based on these results, because the p-value is 0.006 < 0.05 and the CR value is 2,758 > 1.96, it can be concluded that organizational commitment has a positive and significant effect on the performance of regional financial management.

Hypothesis 7: The results of statistical testing provide the results of the estimated value of the influence of supervision quality on the performance of regional financial management of 0.357, CR value 3.592 and p-value 0.000. Based on these results, because the p-value is 0.000 < 0.05 and the CR value is 3.592 > 1.96, it can be concluded that the quality of supervision has a positive and significant effect on the performance of regional financial management.

Hypothesis 8: **The** coefficient of indirect influence of competence on the performance of regional financial management through the quality of supervision is 0.298 x 0.357 = 0.106. A z-value of 2.529 is greater than Z 1.96 at a significance level of 0.05, it can be concluded that the indirect coefficient value of 0.106 is significant. Therefore, it is concluded that competence has a significant effect on the performance of regional financial management mediated by the quality of supervision.

Hypothesis 9: **The** coefficient of indirect influence of accountability on the performance of regional financial management through supervision quality is 0.334 x 0.357 = 0.119. The z-value of 2.437 is greater than the z-value of 1.96 at the significance level of 0.05, it can be concluded that the value of the indirect influence coefficient of 0.119 is significant. Therefore, it was concluded that significant accountability had an effect on the performance of regional financial management mediated by the quality of supervision.

Hypothesis 10: **The** coefficient of indirect influence of organizational commitment on the performance of regional financial management through quality supervision is 0.264 x 0.357 = 0.094. The z-value of 2.306 is greater than the Z 1.96 at the significance level of 0.05, so it can be concluded that the value of the indirect coefficient of 0.094 is significant. Therefore, it is concluded that organizational commitment significantly affects the performance of regional financial management mediated by the quality of supervision.

Indirect effect

Indirect effect is an influence obtained through intermediate variables/mediators. Based on the results of the model analysis output, the value of each indirect influence of causality relationship in this study is seen in the following table.

Table 3. Coefficient of Indirect Influence

It	Path of Influence	Influence TL
1.	Aspects of Competence ---> Quality of Supervision ---> Performance of Regional Financial Management	0.106
2.	Accountability Aspects ---> Quality of Supervision ---> Performance of Regional Financial Management	0.119
3.	Aspects of Organizational Commitment ---> Quality of Supervision ---> Regional Financial Management Performance	0.094

Primary data sources processed by AMOS, 2023

The table above shows the magnitude of the value of the indirect influence coefficient, from the sobel test there are two tests showing a significant influence path, namely from the variables of human resource competence and accountability. The highest indirect influence of the accountability variable was 0.119. Then the indirect influence of competence was 0.106 and the lowest of organizational commitment was only 0.094.

Total effect

The results of the analysis showed that the highest total influence of the accountability variable on the performance of regional financial management was 0.458. Then the total effect of competence on 0.346. The lowest total influence on the organizational commitment path on the performance of regional financial management is only 0.320.

Discussion

The Effect of HR Competence on Supervision Quality

The results of this study show that the competence of human resources has a positive and significant effect on the quality of supervision, this means that the higher the competence of human resources, the higher the quality of supervision, and vice versa. Competence is one of the factors that significantly affects the quality of supervision. This means that efforts to improve the quality of supervision can be carried out through increasing the competence of human resources.

HR competence is the ability and characteristics that a person has in the form of knowledge, skills, and behavioral attitudes that are necessary in the implementation of his or her job duties in his work environment. The level of competence is needed to be able to know the expected level of performance for the good or average category. The determinant of the required competency threshold will certainly be able to be used as the basis for the process of

selection, succession, planning succession, performance evaluation, and human resource development

(Armstrong, 2004) Interpreting competence is what people bring to a job in the form of different types and levels of behavior. Murphy defines competence as any talent and skill of an individual that can be demonstrated, can be linked to effective and excellent performance. (S. Sedarmayanti, 2009)　(Riyanti & Efni, 2020)　found that the competence of human resources has a significant impact on supervision and with good supervision, the work results will be in accordance with expectations. This is where the relationship between this research and the latest research by Riyanti & Efrina lies.

The Effect of Accountability on the Quality of Supervision

The results of this study show that accountability has a positive and significant effect on the quality of supervision. This means that the higher the accountability, the higher the quality of supervision, and vice versa. Accountability is one of the factors that significantly affects the quality of supervision. This means that efforts to improve the quality of supervision can be carried out through increasing accountability.

Accountability as a form of obligation to account for the success or failure of the implementation of the organization in achieving the goals and objectives that have been set previously, through an accountability medium that is carried out periodically. According to accountability, it is a form of obligation of providers of public activities to be able to explain and answer everything regarding the steps of all decisions and processes carried out, as well as accountability for the results of their performance.　(Kusumastuti, 2014) One form of concrete effort to be able to realize financial management accountability is the submission of financial accountability reports that meet the principles of timeliness and are prepared based on generally accepted government accounting standards.

The results of this study are in line with research conducted by　(Suharyono, 2019) which shows that accountability, transparency, and supervision both partially and simultaneously have a positive and significant effect on budget performance with the concept of value for money in Regionally Owned Enterprises (BUMD) of Riau Province.

The Effect of Organizational Commitment on the Quality of Supervision

The results of the study show that organizational commitment has a positive and significant effect on the quality of supervision. This means that the higher the organization's commitment, the higher the quality of supervision, and vice versa. Organizational commitment is one of the factors that significantly affects the quality of supervision. This means that efforts to improve the quality of supervision can be carried out through increasing organizational commitment.

Organizational commitment means more than just formal membership, because it includes an attitude of liking the organization and a willingness to strive for a high level of effort for the benefit of the organization to achieve its goals. According to organizational commitment, it is a measure of the willingness of employees to stay with a company in the future. Commitment often reflects the employee's confidence in the organization's mission and goals, willingness to put in the effort to get the job done, and a desire to continue working there. (Steers & Porter, 2011)　(Kaswan, 2017)

(Mowday, 2001) argues that organizational commitment is the identification of a person who is relatively strong in involvement in the organization and is willing to work hard to achieve organizational goals. Defining organizational commitment as a strong desire to be a member of a particular organization. Organizational commitment is also the desire to achieve a high level of expertise on behalf of the organization, a firm trust, and acceptance of the organization's values and goals.　(Luthans, 2006a) The results of this study are in line with the research conducted by　(Saputra & Hutahaean, 2016) . With the title "The effect of financial

management knowledge, competence and supervision act of the government's internal control officer on the quality of government's performance accountability report evaluation"

The Effect of Human Resources Competence on Regional Financial Management Performance

The results of this study show that the competence of human resources has a positive and significant effect on the performance of regional financial management. This means that the more competent the human resources, the better the effectiveness of regional financial p-engeloolaan, and vice versa. Competence is one of the significant factors affecting the behavior of regional financial management performance. This means that efforts to improve the quality of regional financial management can be carried out through increasing the competence of human resources.

In achieving the effectiveness of financial management, the government must have competent human resources, according to stating that competent human resources will be able to increase the effectiveness of regional financial management, and vice versa if the resources are not competent, the achievement of the effectiveness of regional financial management will not be achieved. This is supported by individual knowledge, behavior, and ability to carry out tasks. The study concluded that human resource competence has a positive effect on the effectiveness of regional financial management. (Saleba, 2014)　(Siti Nurjannah, 2014)

The results of this study are in line with the research that human resource competence has a positive effect on the effectiveness of regional financial management. The study also states that HR competencies have a significant impact on performance in financial management. Even research and also revealed that if employees have good competence, it will affect the effectiveness in regional financial management. The higher the competence possessed by human resources, the better the performance of regional financial management in the regional apparatus. (Siti Nurjannah, 2014)　(Raza et al., 2022)　(S. I. Tambing et al., 2022)　(K. D. C. Putri et al., 2019)　(Safwan & Abdullah, 2014)　(Rafar et al., 2015) (Kaunang, 2020)　(Sari et al., 2017)

The Effect of Accountability on Regional Financial Management Performance

The results of the study show that accountability has a positive and significant effect on the performance of regional financial management. This means that the higher the accountability, the higher the performance of regional financial management, and vice versa. Accountability is one of the factors that significantly affects the performance of regional financial management. This means that efforts to improve regional financial management performance can be carried out through increasing accountability.

Accountability is a principle that determines that every activity and the final result of budget management must be accountable to the community as the highest sovereignty. The principle of Accountability is that every performance of duties, use of resources, and use of authority must be or examined either by interested parties or through independent institutions. Meanwhile, the principle of transparency means that all government implementations must be open to the general public, both in decision-making and policy formulation and in relation to a decision need to have access to obtain the information needed. The main characteristics of good budget management are accountability and transparency which are the manifestation of good governance. The government must be able to increase the accountability of regional financial management

The results of this study are in line with the research and that the improvement of performance in managing regional finances is influenced by accountability. In his research, he said that the implementation of accountability is expected to be able to increase supervision of local government financial management, so that good supervision will have a significant impact on improving financial management performance. Several other studies also prove that

better accountability will be able to improve the performance of regional financial management.

The Effect of Organizational Commitment on Regional Financial Management Performance

The results of this study show that organizational commitment has a positive and significant effect on the performance of regional financial management. This means that the higher the organization's commitment, the higher the performance of regional financial management, and vice versa. This means that efforts to improve the performance of regional financial management can be carried out through increasing organizational commitment.

According to (in organizational commitment is a strong determination to remain a member of an organization, the determination to fight hard in accordance with the organization's goals, as well as certain beliefs and heartily accept the values and goals of the organization. Furthermore, according to (in organizational commitment as a sense of seriousness towards the organization's goals, the feeling of participating in the organization's tasks and the feeling of loyalty to the organization.

Organizational commitment can be one of the factors that can allegedly improve the quality of financial reports. Organizational commitment is a strong desire as a member of the organization to follow the direction and goals of the organization. Therefore, it can be said that organizational commitment can improve the quality of financial statements. Organizational commitment is built on the basis of workers' trust in the organization's values, workers' willingness to help realize organizational goals and loyalty to remain members of the organization. The results of this study are in line with the results of the research conducted by, but the results of this study are different from the results of the research conducted by (Nugroho & Setyowati, 2019)   (Setiyawati, 2013)   (Suarmika & Suputra, 2016)   (Silviana, 2014)   (Widari & Sutrisno, 2017)   (Suwanda, 2015)   (Ratifah & Ridwan, 2014)   (Zuria, 2016)   (Lodhrakentjana & Luthan, 2014) and (Maksyur et al., 2015)

The Effect of Supervision Quality on Regional Financial Management Performance

The results of this study show that the quality of supervision has a positive and significant effect on the performance of regional financial management. This means that the higher the quality of supervision, the better the performance of regional financial management of innovative behavior, and vice versa, the quality of supervision is one of the factors that significantly affects the performance of regional financial management. This means that efforts to improve the performance of regional financial management can be carried out through improving the quality of supervision.

Supervision of regional financial management is very important, because supervision is an effort to ensure harmony between the implementation of government duties in the region or the central government and ensure the smooth implementation of government.   (Halim, 2002) Supervision is an organization's way of realizing effective and efficient performance, as well as further supporting the realization of the organization's vision and mission. Supervision is a function that ensures that activities can provide the desired results. Supervision is every effort and action in order to find out the extent of the implementation of the tasks carried out according to the provisions and goals to be achieved.   (Mansyur & Yulianto, 2020) (Merdekawati, 2022)   (Djula, 2021)

The results of this study are in line with the research that supervision has a significant impact on improving the performance of regional financial management. Research;; It was also found that better supervision will affect the performance of a region's financial management. Although there has not been much research that reveals the role of supervision as a mediating variable, if you refer to the view, supervision is the process of observing the implementation of all organizational activities to ensure that all work that is being carried out

runs according to the predetermined plan. (E. Tambing et al., 2002) (Harnovinsah et al., 2020) (Suharyono, 2019) (Permatasari et al., 2019) (Siagian, 2014)

The Effect of Human Resources Competence on the Performance of Regional Financial Management Examined by the Quality of Supervision

The results of this study show that the competence of human resources has a positive and significant effect on the performance of regional financial management mediated by the quality of supervision. This means that the higher the competence of human resources, the higher and better the performance of regional financial management mediated by the quality of supervision, and vice versa. Human resource competence is one of the factors that significantly affects the performance of regional financial management through the quality of supervision. This means that efforts to improve the performance of regional financial management can be carried out through improving human resource competence and the quality of supervision.

The results of this study indicate that the higher the aspect of human resource competence, the better the performance of regional financial management mediated by the quality of supervision. This emphasizes that the positive impact of human resource competence in the process of improving regional financial management performance is significant in managing regional finances, if carried out through quality supervision. The findings of this study provide empirical evidence that the quality of supervision is a good mediation variable and functions to mediate the aspect of human resource competence to the performance of regional financial management indirectly. Thus, this is a reference for regional apparatus officials in paying attention to the importance of quality of supervision in managing regional finances. The results of this study are in line with the research, which shows that competence, motivation and commitment of the organization have a significant and partially significant positive effect on financial management performance. (Kaunang, 2020)

The Effect of Accountability on Regional Financial Management Performance Mediated by Quality of Supervision

The results of this study show that accountability has a positive and significant effect on the performance of regional financial management mediated by the quality of supervision. This means that the higher the accountability, the higher the performance of regional financial management mediated by the quality of supervision, and vice versa. Accountability is one of the factors that significantly affects the performance of regional financial management mediated by the quality of supervision. This means that efforts to improve the performance of regional financial management can be carried out through increasing accountability and quality of supervision.

The results of this study indicate that the higher the accountability, the better the performance of regional financial management mediated by the quality of supervision. This further emphasizes that the positive impact of accountability in the process of improving the performance of regional financial management is significant in running and managing regional finances, if carried out through the quality of supervision. The quality of supervision is able to mediate partially, meaning that the implementation of accountability can directly affect the performance of regional financial management when mediated by the quality of supervision. The coefficient of relationship direction obtained a positive value that the quality of supervision can improve the performance of regional financial management.

The results of this study are in line with the research (Prabawa et al., 2020) that states that: (1) the internal control system has a positive and significant effect on efforts to realize good governance, (2) the accountability of regional financial management does not have a positive and significant effect on efforts to realize good governance. The lack of human resources with accounting education backgrounds has an impact on the planning, implementation of administration, reporting, accountability and supervision of regional finances.

The Effect of Organizational Commitment on Regional Financial Management Performance Through Quality of Supervision

The results of the study show that organizational commitment has a positive and significant effect on the performance of regional financial management mediated by the quality of supervision. This means that the higher the organization's commitment, the higher the performance of regional financial management through the quality of supervision, and vice versa, organizational commitment is one of the factors that significantly affects the performance of regional financial management through the quality of supervision. This means that efforts to improve the performance of regional financial management can be carried out through increasing organizational commitment and the quality of supervision.

The results of this study indicate that the higher the organization's commitment, the better the performance of regional financial management mediated by the quality of supervision. This further emphasizes that the positive impact of organizational commitment in the process of improving the performance of regional financial management is significant in managing regional finances, if carried out through good quality of supervision Based on the findings of this study, empirically that the quality of supervision is a good mediation variable and functions to mediate the organization's commitment to the performance of regional financial management indirectly. The results of this study are in line with the research (Budiati et al., 2019) that states that: (1) Good corporate governance has a positive and significant effect on financial management performance. (2) The Internal Control System strengthens the influence of Good Corporate Governance on the performance of regional financial management.

CONCLUSION

Human resource competence, accountability and organizational commitment have a positive and significant effect on the quality of supervision. The higher the competence, accountability and commitment of the organization, the higher the quality of supervision, and vice versa. Human resource competence, accountability and organizational commitment have a positive and significant effect on regional financial management performance. The higher the competence, accountability and commitment of the organization, the higher the performance of regional financial management, and vice versa. The quality of supervision has a positive and significant effect on the performance of regional financial management. This shows that the quality of supervision is able to improve the performance of regional financial management. Human resource competence, accountability and organizational commitment have a positive and significant effect on the performance of regional financial management mediated by the quality of supervision. The higher the competence, accountability and commitment of the organization, the higher the performance of regional financial management mediated by the quality of supervision.

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Inpatient Case Report: Severe Malaria

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KEYWORDS	ABSTRACT
Severe Malaria, *Plasmodium falciparum*, Cerebral Malaria, Pediatric Infectious Disease, Anemia, Organ Dysfunction	Malaria is a significant global health problem caused by Plasmodium parasites transmitted through Anopheles mosquito bites, predominantly affecting tropical and subtropical regions. This case report focuses on a pediatric patient with severe malaria caused by *Plasmodium falciparum* at Prof. Dr. W.Z. Johannes Hospital, Kupang, Indonesia. The patient, a 7-year-old girl, presented with fever, vomiting, reduced appetite, and decreased consciousness. Laboratory tests revealed severe anemia, liver dysfunction, and positive malaria microscopy for *P. falciparum*. The study employed a comprehensive clinical approach, combining patient history, physical examination, and laboratory tests to diagnose and manage the condition. Treatment included intravenous fluids, antimalarial drugs, and supportive care. The results underscore the importance of prompt diagnosis and treatment in severe malaria cases to mitigate life-threatening complications like cerebral malaria, which is associated with high mortality rates. This case highlights the pressing need for tailored malaria management strategies, particularly in resource-limited settings. Conclusively, timely and targeted interventions can effectively address severe complications, ensuring better outcomes in malaria-endemic regions.

INTRODUCTION

Malaria is an acute to chronic infectious disease caused by one or more protozoan parasites of the genus Plasmodium that are transmitted to humans through the bite of the Anopheles mosquito which also functions as the host of this parasite. This disease is characterized by the discovery of an asexual form in the blood and this parasite attacks erythrocytes (Gusra et al., 2014; Indonesia, 2019). Malaria manifests as an acute or chronic disease, characterized by paroxysmal fever, chills, fatigue, sweating, anemia and splenomegaly. Clinical manifestations in children are different and non-specific than adults (Liwan, 2015).

Until now, malaria is still an important health problem in the world, especially in tropical and subtropical areas such as Brazil, all of sub-Saharan Africa and Southeast Asia because it affects the morbidity of infants, toddlers, and mothers giving birth and causes Extraordinary Events (KLB) (Hasyim et al., 2014). Globally, there was a decrease in the number of malaria cases and deaths due to malaria between 2000-2015. It is estimated that the number of malaria cases in 2000 was around 262 million cases with a death rate of 839,000 deaths, while in 2015 it was estimated to be around 214 million cases of malaria with 438,000 deaths and about 7% of deaths in Asia. Most deaths occur in children and non-immunized adults. In addition, 306,000 cases of deaths in children less than 5 years old due to malaria were also reported. For a while malaria was still the leading killer in children, where death occurred every 2 minutes

(Organization, 2015). In Indonesia, according to the WHO in 2006, more than 90 million people lived in endemic areas, with cases of about 30 million each year (Semme & Widyaningrum, 2023).

Malaria is still endemic in most parts of Indonesia (Laihad, 2021). The prevalence of malaria in the Indonesian population in 2013 was 6.0% and the incidence of malaria in NTT was around 6.8% with cases being more dominant by P. falciparum and P. vivax around 0.5% cases and cases in children most often due to P. falciparum 1.2% (Badan Penelitian dan Pengembangan Kesehatan, 2019).

Severe malaria is caused by Plasmodium falciparum or tropical malaria. The disease is rare in the first months of life, but in children who are a few years old can have severe attacks of tropical malaria. One of the most dangerous complications of this falsiparum infection is complications to the central nervous system or also known as severe malaria or cerebral malaria (Parmadi & Pratama, 2020). This type of malaria infection can cause organ dysfunction and even death (Handbook, 2012). Cerebral malaria is a complication of Plasmodium falciparum infection and is the leading cause of death (20-40% of cases), especially in children and non-immune-exempt adults. Similar to other complications, cerebral malaria is more common in patients with severe parasitemia (≥5%) (Marcdante et al., 2021). The mortality rate of cerebral malaria without other complications is quite low, which is around less than 0.1%. But when there are complications of liver organ disorders and erythrocytes infected >3%, then mortality becomes very high. Although treated, cerebral malaria has a mortality rate of 20% in adults and as much as 15% in children (Harijanto et al., 2020).

The incidence of malaria can be prevented, namely by preventing the bite of the causative vector, with prophylactic drugs and using vaccines, but there are various stages in the course of malaria that cause difficulties in making it.

Anamnesis and physical examination were carried out on November 18 and 19, 2016 in the ICU and Kenanga rooms of Prof. DR. W.Z. Johannes Kupang Hospital.

Patient Identity

Name   : An.AM
Age   : 7 years 10 months
Gender   : Woman
Address   : West Fatuleu

Anamnesis (November 18 and 19, 2016)

a) Main Complaint : Decreased consciousness since ± 2 days before admission to the hospital.

b) Current Disease History (autoanamnesis and alloanamnesis): The patient is a referral from the Regional Hospital with a decrease in consciousness that has occurred since ± 2 days before entering the hospital. The decrease in consciousness occurs suddenly when the patient is about to sleep at night. At first, the patient looked restless and looked unsettled. 1 week before the patient had a fever, the fever disappeared, fever until chills. Fever most often arises at night, the fever will usually decrease after the child sweats, but some time after sweating the patient will have a fever again. The patient has been treated at the health center and received paracetamol and malaria drugs, but there is no improvement. In addition to fever, the patient also vomited 4x, vomited after the patient ate, vomited without spraying. Since the onset of fever, the patient's appetite has decreased. According to the patient, since the beginning of the fever, the patient felt pain and nausea in the patient's body and pain in the heart area, the pain of the heart is still felt until now, the pain is like being stabbed. Cold cough is absent. The patient has not defecated since 5 days ago, BAK is still within normal limits.

c) Medical history: The patient had been treated at the health center in the previous 4 days received paracetamol and malaria medication but there was no improvement, the next

2 days the patient was taken again to the health center because he looked restless and was immediately referred to the Regional Hospital.

d) Past Disease History: Never suffered from the same disease before.

e) Family Illness History: No family member is or has ever suffered from the same illness as the patient.

f) Pregnancy and Birth History: During the pregnancy of ANC mothers at the health center 8 times, the child was born spontaneously vaginally at home with a birth weight of 3200 grams.

g) Immunization History: Unknown (since the age of 8 months the child lives with his grandmother), the scar on the right arm (+).

Physical Examination (November 18, 2016)

General conditions	: The patient appears to be seriously ill.
Awareness	: Delirium, GCS (E3V3M4).
TTV Pulse	: 135 x/min and 122x/min, regular, strong lift.
RR	: 36 x/min
Temperature	: 38.10C (axillary)
Nutritional Status BB	: 24 Kg
TB	: 124 cm
BMI/U	:Usual
Skin	: Tan, pale (+), cyanosis (-), icteric (-).
Head	: Brown hair, evenly distributed and not easy to pull out.
Eye	: Pale conjunctiva (+/+), icteric sclera (+/+), isocular pupil and direct, indirect (+/+) light reflexes.
Nose	: Septal deviation (-), secretion (-), nasal lobe breath (-), O2 nasal canul 2 lpm installed.
Ear	: Secretary (-)
Mouth	: dry lip mucosa (+), pale (+), cyanosis (-)
Neck	: Enlargement of KGB (-), mass (-)
Thorax	
Inspection	: Left and right symmetrical chest development, retraction (+)
Palpation	: Tactile fremitus left=right
Percussion	: Sonor
Auscultation	: Vesikuler (+/+), rhonkhi (-/-), wheezing (-/-)
Heart	
Inspection	: Ictus cordis invisible
Palpation	: Ictus cordis palpable di ICS V linea midclavicula sinistra
Percussion	:Dim
Auscultation	: S1S2 single, regular, murmur (-), gallop (-)
Abdominal	
Inspection	: The stomach appears flat.
Auscultation	: Intestinal noise (+) ⎕ 11x/min
Palpation	: Hepar palpable 3 fingers below arcus costa (4 cm), lien scuffner 2.
Percussion	:Timpani
Limb	: Akral warm, pale (+), CRT <3 seconds, swollen (-)

Supporting Examination (17 and 18 November 2016)

November 17, 2016

Hemoglobin : 5.2 g/dL (L)
Number of Erythrocytes: 3.09x10^6/uL (L)
Hematocrit : 15.1 % (L)
MCV : 49.7 fL (L)
MCH : 17.1 pg (L)
MCHC : 34.4 g/L
Leukocyte : 14,45 10^3/ul
Eusinophyll : 0.1 % (L)
Basophils : 0,5 %
Neutrophils : 48,4 %
Lymphocytes : 37,0 %
Monocytes : 14.0 % (H)
Platelets : 82x10^3/ul (L)
Malaria Mik. :(+2) Plasmodium falciparum
SGPT : 62 U/L (H)
SGOT : 225 U/L (H)
GDS : 118 mg/dL
Urea : 51.10 mg/dL (H)
Creatinine : 0.79 mg/dL
Sodium : 138 mmol/L
Potassium : 4.6 mmol/L (H)
Chloride : 105 mmol/L
CRP : Positive (24 mg/L)

November 18, 2016

Hemoglobin : 5.1 g/dL (L)
Number of Erythrocytes: 2.93x10^6/uL (L)
Hematocrit : 14.6 % (L)
MCV : 49.8 fL (L)
MCH : 17.4 pg (L)
MCHC : 34 g/L
Leukocyte : 10.61 10^3/ul
Eusinophyll : 0.4 % (L)
Basophils : 0,8 %
Neutrophils : 52,9 %
Lymphocytes : 33,3 %
Monocytes : 12.6 % (H)
Platelets : 21x10^3/ul (L)
LED : 8 mm/h
Malaria Mik. :(+2)Plasmodium falciparum

Resume

ANAMNESIS

Decrease in consciousness 2 days SMRS.1 week before fever, fever disappears, fever to chills. The patient has been treated at the health center and received paracetamol and malaria drugs, but there is no improvement. Vomiting 4x. The patient's appetite decreases. According to the patient, since the beginning of the fever, the patient feels pain and tingling in the patient's body.

PHYSICAL EXAMINATION

General conditions : Tamapak is seriously ill
Awareness : Delirium, GCS (E3V3M4)
TTV   Pulse : 135x/min, regular, strong lifting
RR : 36x/min
S : 38.10C (axillary)
Nutritional Status
TB : 128 cm
BB : 24 Kg
BMI/U :Usual
Skin : Pale (+)
Eye : Pale conjunctiva (+), icteric sclera (+)
Mouth : Dry and pale lip mucosa.
Thorax : Within normal limits
Heart : Within normal limits
Abdominal : Distension (+), palpable hepatic 3 fingers below arcus costa, lien scuffner 2.

Limb   : Pale (+)
LABORATORY RESULTS
Hemoglobin   : 5.2 g/dL (L)
Number of Erythrocytes: 3.09x10^6/uL (L)   SGPT   : 62 U/L (H)
Hematocrit   : 15.1 % (L)
MCV   : 49.7 fL (L)   SGOT   : 225 U/L (H)
MCH   : 17.1 pg (L)   GDS   : 118 mg/dL
MCHC   : 34.4 g/L
Leukocyte   : 14,45 10^3/ul   Urea   : 51.10 mg/dL (H)
Platelets   : 82x10^3/ul (L)
Malaria Mik. :(+2) Plasmodium falciparum   Creatinine : 0.79 mg/dL

Work Diagnosis   Sodium   : 138 mmol/L
Severe Malaria
Anemia   Potassium   : 4.6 mmol/L (H)
Dyspepsia   Chloride   : 105 mmol/L
Differential Diagnosis
Typhoid encephalopathy   CRP   : + (24 mg/L)
Sebsis
Severe leptospirosis/Weil's disease.

                                             PRC Transfusion 200 cc/24 hours

                                             Lasix 1x25 mg iv
Therapy
- IVFD D5% 1500 cc/24 hours
- Darplex 2x11/2 tabs.
- Ranitidin 2x1/2 amp.
- PCT 1/2 tab☐ every 6 hours

Previous studies have emphasized the clinical and epidemiological aspects of severe malaria caused by *P. falciparum*. For instance, Harijanto et al. (2020) explored the complications associated with severe malaria, including organ dysfunction and high mortality rates. Similarly, Das and Pani (2016) discussed the symptomatology and progression of cerebral malaria in pediatric patients, highlighting the role of early diagnosis in reducing morbidity and mortality. However, the majority of these studies focus on general population data, leaving gaps in understanding specific pediatric presentations and outcomes, particularly in Indonesian contexts.

Severe malaria remains a leading cause of mortality among children in malaria-endemic regions. The disease's complexity and potential to cause severe organ dysfunction necessitate immediate attention to improving diagnostic and treatment protocols, particularly in areas with limited healthcare infrastructure.

While extensive research exists on malaria epidemiology and general management, there is limited data on severe pediatric cases involving *P. falciparum* in Indonesia. The lack of targeted studies on clinical management strategies for severe malaria in children, especially in resource-constrained settings, presents a critical research gap.

This study uniquely examines a pediatric case of severe malaria with cerebral involvement in Indonesia, providing insights into clinical presentation, diagnostic challenges, and management outcomes. It emphasizes the integration of supportive care with standard antimalarial treatments tailored to resource-limited settings.

The research aims to document the clinical course, diagnostic approach, and management of severe pediatric malaria caused by *P. falciparum*, highlighting effective treatment protocols and challenges in endemic regions.

The findings contribute to improving clinical guidelines for pediatric malaria management in Indonesia and similar endemic regions. It provides healthcare practitioners with

actionable insights to enhance early diagnosis and reduce complications associated with severe malaria.

Strengthening diagnostic and treatment protocols based on case studies like this can reduce mortality rates and improve healthcare outcomes in endemic regions. The study reinforces the need for capacity building in healthcare systems to address severe malaria cases effectively.

RESEARCH METHOD

The method used in the clinical case presented involves a combination of anamnesis (patient history) and physical examination, followed by laboratory testing to establish a diagnosis and treatment plan for a patient with severe malaria. The process began with a thorough collection of the patient's medical history, which included details about the onset and progression of symptoms, previous treatments, and relevant past medical and family history. This was complemented by a physical examination that assessed the patient's general condition, consciousness level, vital signs, and specific signs of malaria, such as pallor and hepatomegaly.

Subsequently, laboratory tests were performed to obtain quantitative values for hemoglobin, erythrocytes, and other blood parameters, confirming the diagnosis of severe malaria caused by Plasmodium falciparum, as indicated by the presence of the parasite in the blood smear. This comprehensive approach ensured accurate diagnosis and treatment of the patient's condition, which included severe anemia and potential complications associated with malaria. The therapy administered was tailored to address the identified issues, utilizing intravenous fluids, antimalarial medications, and supportive care to manage symptoms and improve the patient's overall condition.

RESULTS AND DISCUSSION

Malaria is an acute to chronic infectious disease caused by one or more species of Plasmodium, characterized by intermittent high fever, anemia and hepato-splenomegaly.[1] Malaria is caused by protozoa of the genus Plasmodium. In humans, plasmodium consists of 4 species, namely *Plasmodium falciparum* which causes severe infections and can even cause death*, Plasmodium vivax* causes tertiana malaria*, Plasmodium malariae* causes quartana malaria, *Plasmodium ovale* which causes malaria ovale and *Plasmodium knowlesi* (Rampengan, 2017).

Until recently malaria is still a worldwide problem with the main transmission areas being Asia, Africa and South America. In Indonesia, malaria is spread throughout the island with varying degrees of endemicity. The most common species are *Plasmodium falciparum* and *Plasmodium vivax*. Malaria can be transmitted in two ways, namely through natural *infection,* namely through anopheles mosquito bites and non-natural transmission such as congenital or congenital malaria, mechanical transmission occurs through blood transfusions.[8]

In its life cycle, plasmodiums need two hosts, namely humans and female anopheles mosquitoes.
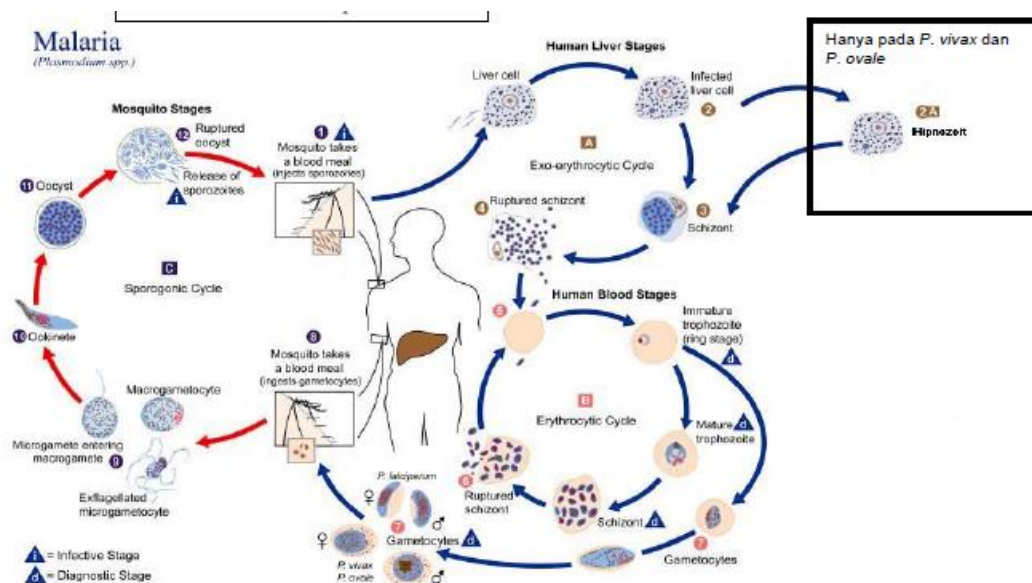
Figure 1 Plasmodium Life Cycle.

The asexual cycle occurs in the human body whereas the sexual cycle occurs in the body of mosquitoes. The incubation period varies depending on the plasmodium species. Clinically, the symptoms of non-immune-infected single-infection malaria consist of several febrile attacks at specific intervals interspersed by a fever-free period (latent period). Before fever the patient usually feels weak, headache, no appetite, nausea and vomiting. The parochism period usually consists of three consecutive stages, namely the cold stage, the fever stage and the sweaty stage (Siregar, 2015).

In this case, the patient was brought by his family due to a decrease in consciousness since 2 days earlier, the patient had been treated and diagnosed with falsiparum malaria. In theory, it is said that falsiparum malaria is the cause of severe malaria or cerebral malaria. This is in line with the theory that malaria accompanied by one or more disorders as listed below is severe malaria, including: cerebral malaria with decreased consciousness (delirium, stupor, coma). Cerebral malaria in children is often characterized by seizures, but keep in mind that seizures in children have many causes. The most important neurological sign of cerebral malaria is the disorder *upper motor neuron* which is symmetrical and brainstem. Delirium, hallucinations or tantrums are very rare in children. In addition, malaria is also known to have three clinical stages that are often found, including the cold period, fever stage and sweating stage. According to the patient's parents, the fever went up and down and until they shivered and sweated. After sweating, the heat experienced will go down, and after a while the patient will be hot again, this is experienced by the patient for ± 5 days before the patient experiences a decrease in consciousness. Fever in malaria arises due to the rupture of blood schizon which secretes various antigens that stimulate magrophage cells, monocytes or lymphocytes to secrete various kinds of cytokines, including TNF and Il-6 which will be carried by the bloodstream to the hypothalamus as a center for regulating body temperature and fever occurs. Clinical symptoms in malaria are febrile (47%), usually followed by gastroenteritis (38.1%) (Das & Pani, 2016). In addition, other symptoms that are also found in malaria are weakness, nausea vomiting, back pain, myalgia, back pain and the patient looks pale.[1] According to the patient's parents, since the beginning of the fever, the patient's appetite has decreased and the patient has vomited 4 times. Vomiting occurs after eating. The patient also admitted that before experiencing a decrease in consciousness, the patient felt pain all over the body and pain in the uluhati area. In addition, on the physical examination, anemia, jaundice and hepato-splenomegaly were found. Physical examination and laboratory examination results found

anemia, paleness, jaundice in the sclera, hepatomegaly (2 fingers below arcus costa) and splenomegaly (Schuffner 2).

This patient was diagnosed with severe malaria where severe malaria is caused by *P. Falciparum* accompanied by other additional symptoms such as hyperparasitemia, when >5% of erythrocytes are infested with parasites, decreased consciousness in cerebral malaria, severe anemia with hemoglobin levels of <7 g/dl, bleeding, jaundice with serum bilirubin levels >50 mg/dl, hypoglycemic (<40 mg/dl), pulmonary edema as evidenced by thorax photographs, shock with systol blood pressure <80 mmHg in adults and < 50 mmHg in children, Hyperpirexia, thrombocytopenia (<100,000 platelets/µl) or in some cases very extreme platelet levels (<20,000/µl), abnormal bleeding and acute kidney failure. Renal function is an indicator of prognosis in adults infected with falsiparum malaria in Southeast Asia. There are studies that prove that in cases of severe falsiparum accompanied by impaired kidney function>50% are found in children.[1][8][9][14] The results of blood tests proved that the patient had anemia with hemoglobin levels of 5.2 g/dL, falsiparum malaria (+2), liver function disorders with SGPT values (62 U/L), SGOT (225 U/L), and kidney function disorders with urea levels (51.10 mg/dL) and creatinine (0.79 mg/dL).

The treatment given is radical malaria treatment by killing all stages of the parasite in the human body. Malaria treatment in Indonesia uses a combination of Anti-malarial Drugs (OAM). What is meant by combination malaria treatment is the use of two or more anti-malarial drugs whose pharmacodynamics and pharmacokinetics are appropriate, synergistic and different ways of resistance. The goal of this combination therapy is to better treat and prevent the development of Plasmodium resistance to anti-malarial drugs. The first option for the treatment of malaria is artemisinin derivatives. The first line of falsiparum malaria uses a combination of ACT and primaquin. First-line therapy of malaria falsiparum by body weight with DHP and primaquinin is listed in the table below.

Table 1 First-Line Treatment of Malaria falsiparum by weight body with DHP and Primaquine.

Day	Drug Type	Number of tablets per day by body weight						
		≤5 kg	6-10 kg	11-17 kg	18-30 kg	31-40 kg	41-59 kg	≥60 kg
		0-1 Month	2-11 Month	1-4 Years	5-9 Years	10-14 Years	≥15 Years	≥15 Years
1-3	DHP	¼	½	1	1½	2	3	4
1	Primaquine	-	-	¾	1½	2	2	3

If a patient *with P. falciparum* with a BB of >80 kg comes back within 2 months after the administration of the drug and the blood sample test is still positive *for P. falciparum*, then DHP is given with an increased dose to 5 tablets/day for 3 days. And second-line therapy for falsiparum malaria with a combination of quinine + doxycycline or tetracycline + primaquine, second-line treatment is given if first-line treatment is ineffective. And supportive therapy that can be given is the provision of adequate fluids, nutrition, blood transfusions. PRC blood transfusion 10 ml/kgbb or wb 20 ml/kgbb if anemia with Hb <7.1 g/dl. In addition, symptomatic therapy can also be given, namely by giving anti-pyretic drugs to children with fever to prevent hyperthermia with a dose of paracetamol 15 mg/kgbb/dose every 4-6 hours.[1][3][13] In this case, IVFD therapy D5% 1500 cc/24 hours, darplex 2x11/2 tabs, ranitidine 2x1/2 amp, PCT 1/2 tabs every 6 hours, and PRC transfusion 200 cc/24 hours and pre-transfusion pre-transfusion lasix 1x25 mg iv was given.

CONCLUSION

Malaria is one of the most important parasitic infectious diseases in the world, this disease is a problem especially in developing and tropical and subtropical regions such as Brazil, all of sub-Saharan Africa and Southeast Asia because it affects the morbidity of infants, toddlers, and mothers giving birth and causes Extraordinary Events (KLB).(4) Malaria is an infection that can be acute to chronic caused by one or more species of Plasmodium, characterized by intermittent high fever, anemia and hepato-splenomegaly. Malaria is caused by protozoa of the genus Plasmodium.(1) Malaria manifests as an acute or chronic disease, characterized by paroxysmal fever, chills, fatigue, sweating, anemia and hepato-splenomegaly. In addition, symptoms of gastroenteritis, weakness, nausea, no appetite, back pain, paleness and in severe malaria are found to be decreased consciousness, severe anemia, jaundice, kidney failure, hyperpiraxis, pulmonary edema and even shock.(9)(3)(13) In the case of children with a diagnosis of severe malaria with clinical symptoms found are fever that has occurred ± 1 week, sweating, vomiting 4 times containing food, decreased appetite, and paleness. In addition, the patient also experienced a decrease in consciousness and on the results of the microscopic examination was found the malaria parasite falsiparum (+2), in addition to anemia with a hemoglobin level of 5.2 mg/dl, liver function disorders with SGPT values (62 U/L), SGOT (225 U/L), and kidney function disorders with urea levels (51.10 mg/dL) and creatinine (0.79 mg/dL).

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The Possibility of Hyaluronic Acid as a Theraupetic Option for Peyronie's Disease: Systematic Review

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KEYWORDS	ABSTRACT
hyaluronic acid, peyronie's disease, penile curvature, intralesional therapy	Peyronie's disease (PD) is a progressive, non-malignant disorder affecting the penile connective tissue, characterized by fibrous plaque formation leading to penile curvature and functional impairment. This study aimed to evaluate the effectiveness of hyaluronic acid (HA) as a therapeutic option for PD. A systematic review was conducted following PRISMA guidelines and utilizing the PICOT framework. Articles were sourced from PubMed, ScienceDirect, ProQuest, Wiley, and Google Scholar, focusing on studies published between 2012 and 2022 in English and with full-text availability. Six studies were analyzed, including cohort studies and clinical trials. The findings revealed that intralesional HA injections significantly reduced plaque size, improved penile curvature, and enhanced erectile function, as measured by the International Index of Erectile Function (IIEF). HA's anti-inflammatory and antioxidant properties, along with its ability to remodel collagen, contributed to these outcomes. Compared to other treatments, such as verapamil, HA demonstrated superior efficacy with minimal side effects. The discussion highlights HA's potential as a non-surgical treatment that addresses both physical symptoms and improves patient satisfaction. In conclusion, HA offers a promising, effective, and safe therapeutic alternative for PD, addressing critical gaps in the current management of the disease.

INTRODUCTION

Peyronie's disease (PD) is progressive and non-malignant disorder of the penis affecting the connective tissue in the penis, specifically the tunica albuginea of the corpus cavernosum. It is characterized by the development of fibrous islands and plaque, leading to an abnormal curvature of the penis during erection (Sandean & Lotfollahzadeh, 2020). This curvature results from the hindered expansion of the tunica albuginea, caused by the presence of fibrosis and plaque. However, the exact mechanism responsible for the formation of this scar tissue remains elusive., but it is believed to involve repeated micro-trauma during sexual activity followed by abnormal wound healing in susceptible individuals (Feyisetan, 2023).

Prevalence rates of Peyronie's disease ranging from 0.4% to 20.3% have been reported, and over 10% of men in the United States are reportedly affected by Peyronie's disease. As with many sexual disorders, it understandably triggers significant distress among patients. This distress arises from both the physical deformity and the functional impairment brought about

by the condition (Cilio et al., 2024). Consequently, it significantly diminishes patients' quality of life, with reported rates of significant depression reaching up to 48%. Recent estimates of its prevalence range from 3.2% to 8.9%. These differences can be attributed to various factors such as the age, race, and co-morbidities of the studied population. Additionally, it is likely that Peyronie's disease is under-reported due to personal embarrassment and a lack of awareness about the condition among the general population (Bilgutay & Pastuszak, 2015).

Conservative treatment of Peyronie's disease primarily targets patients in the early stage, characterized by acute inflammation. Surgical intervention is typically reserved for cases where the disease has stabilized for at least 12 months, aiming to correct curvature and facilitate satisfactory intercourse (Capece et al., 2023). Non-operative treatment options for Peyronie's disease include oral pharmacotherapy, intralesional injection therapy, and various topical treatments. Among these, injecting pharmacologically active agents directly into penile plaques is considered the most effective treatment option, as current evidence discourages the use of oral and topical agents (Abdel Fattah et al., 2024).

Additionally, various other therapies have been utilized in the past for Peyronie's disease, including oral treatments such as potassium para-aminobenzoate (Potaba), pentoxifylline, vitamin E, colchicine, tamoxifen, carnitine, and phosphodiesterase type 5 inhibitors. Intralesional treatments, such as steroids and verapamil, have also been explored. However, the outcomes from these treatments have shown contrasting results. Consequently, the European Association of Urology guidelines do not recommend their clinical use (Dr. Claudio et al., 2023).

Hyaluronic acid has demonstrated effectiveness in reducing scar formation and counteracting the effects of substances that induce inflammation and oxidative stress. Due to these properties, it is widely utilized in various medical applications, including cosmetic surgery (for treating wrinkles and scars) and orthopedics (for intra-articular therapy in osteoarthritis). Its therapeutic efficacy and feasibility in treatment cycles have been well-established (Zucchi et al., 2016).

Recent advancements in the understanding of Peyronie's disease (PD) have highlighted the multifactorial nature of its pathophysiology, where inflammation, oxidative stress, and abnormal collagen deposition play pivotal roles. While the exact mechanisms behind plaque formation remain unclear, evidence suggests that these processes lead to fibrosis of the tunica albuginea, resulting in penile deformities. The psychological burden of PD cannot be overlooked, as it often leads to significant emotional distress, anxiety, and reduced quality of life for patients. Current treatment options, particularly intralesional injections, have shown varying degrees of success. Hyaluronic acid (HA), a naturally occurring glycosaminoglycan with potent anti-inflammatory and tissue remodeling properties, has gained attention as a potential therapy. Despite its widespread use in dermatology and orthopedics, HA's application in PD is still emerging, necessitating robust clinical evaluation to determine its efficacy and safety.

Addressing PD in its acute inflammatory stage is critical, as early intervention can mitigate disease progression and prevent severe complications. Intralesional therapies, including verapamil and collagenase, have been explored but often present limitations in effectiveness or safety. Hyaluronic acid, by counteracting inflammatory mediators and oxidative stress, offers a novel therapeutic approach targeting the underlying pathophysiology of PD. Additionally, HA's ability to promote collagen remodeling and tissue regeneration could significantly improve penile curvature and erectile function, filling a critical gap in PD management. This study aims to systematically review the existing literature to evaluate HA's therapeutic potential, emphasizing its impact on plaque size, penile curvature, and patient-reported outcomes.

Previous studies have primarily focused on conservative treatment options for Peyronie's disease, such as intralesional therapies including steroids, verapamil, and collagenase. Notably, research by Zucchi et al. (2016) demonstrated the efficacy of HA in reducing plaque size and penile curvature. Other studies, such as those by Favilla et al. (2017) and Gennaro et al. (2015), provided preliminary evidence supporting HA's ability to enhance erectile function and decrease plaque rigidity. However, existing research often lacks comparative analysis with other treatment modalities, creating an opportunity to explore HA's distinct mechanisms of action and its long-term therapeutic outcomes.

Peyronie's disease significantly impacts quality of life, with high rates of psychological distress and functional impairment. Despite its prevalence, many patients experience suboptimal outcomes due to limited effective treatment options. Addressing this gap with evidence-based interventions like HA is crucial for improving both physical and emotional well-being.

While numerous studies have investigated various intralesional therapies, the comparative efficacy of HA against other treatments remains underexplored. Additionally, there is insufficient data on the long-term outcomes of HA in diverse populations and clinical settings.

This study provides a focused evaluation of HA's role in reducing penile plaque size, curvature, and functional deficits, distinguishing it from alternative therapies by emphasizing its anti-inflammatory and tissue-remodeling properties.

The research aims to assess the clinical efficacy and safety of HA as an intralesional therapy for Peyronie's disease, examining its impact on plaque size, penile curvature, and erectile function.

Findings will guide clinicians in selecting effective, non-invasive treatment options, improving patient outcomes and reducing the need for surgical intervention in Peyronie's disease management.

This study underscores the importance of integrating HA into clinical practice, highlighting its potential to revolutionize the therapeutic approach to Peyronie's disease, thereby enhancing patient care and satisfaction.

RESEARCH METHOD

We conducted a systematic review of the literature to assess the effectiveness of hyaluronic acid in treating Peyronie's disease. Our review adhered to the Preferred Reporting Items for Systematic Reviews (PRISMA) and question formulation using PICOT. Statement guidelines to ensure transparency and rigor in the review process.

Literature search

A comprehensive literature search using a combination of keywords, including MeSH terms and free text words such as 'Hyaluronic acid', 'peyronie disease', and 'Curvature penis'. The databases searched included MEDLINE, EMBASE, and the Cochrane Library (CENTRAL and CDSR), with searches conducted up to 2014. Additionally, we sought additional articles from the reference lists of the included studies to ensure a thorough review of the literature

Selection criteria

We included studies focusing on Peyronie's disease in adult patients. This encompassed case reports, case series, observational studies, non-randomized studies, and randomized trials published in English. Additionally, conference abstracts, letters to editors, commentaries, and editorials were also considered for inclusion. However, studies related to obstetrics and gynecology were excluded from our review. Similarly, studies pertaining to urinary tract conditions and dermatology were also excluded.

Data Collection

For eligible studies, we recorded study information such as first authors, study site, inclusion and exclusion criteria, sample size, and aim of the studies. We utilized a standardized form for data entry, focusing on the following areas: (1) Urological manifestations of Peyronie's disease, (2) Effectiveness of hyaluronic acid in treating Peyronie's disease, (3) Side effects associated with intralesional agents used in treatment.

RESULTS AND DISCUSSION

The PRISMA flow diagram depicted in Figure 1 illustrates the process of study selection. Initially, a total of 105 records were identified through the literature search, with no additional records sought from reference lists. After removing duplicates, 80 records remained. Subsequently, 9 records were excluded during the initial screening process. Additionally, 20 studies were excluded because the full text was not available, 30 studies did not address the research question, and 15 studies were not in English. Ultimately, 6 records met the inclusion criteria and were included in the review.
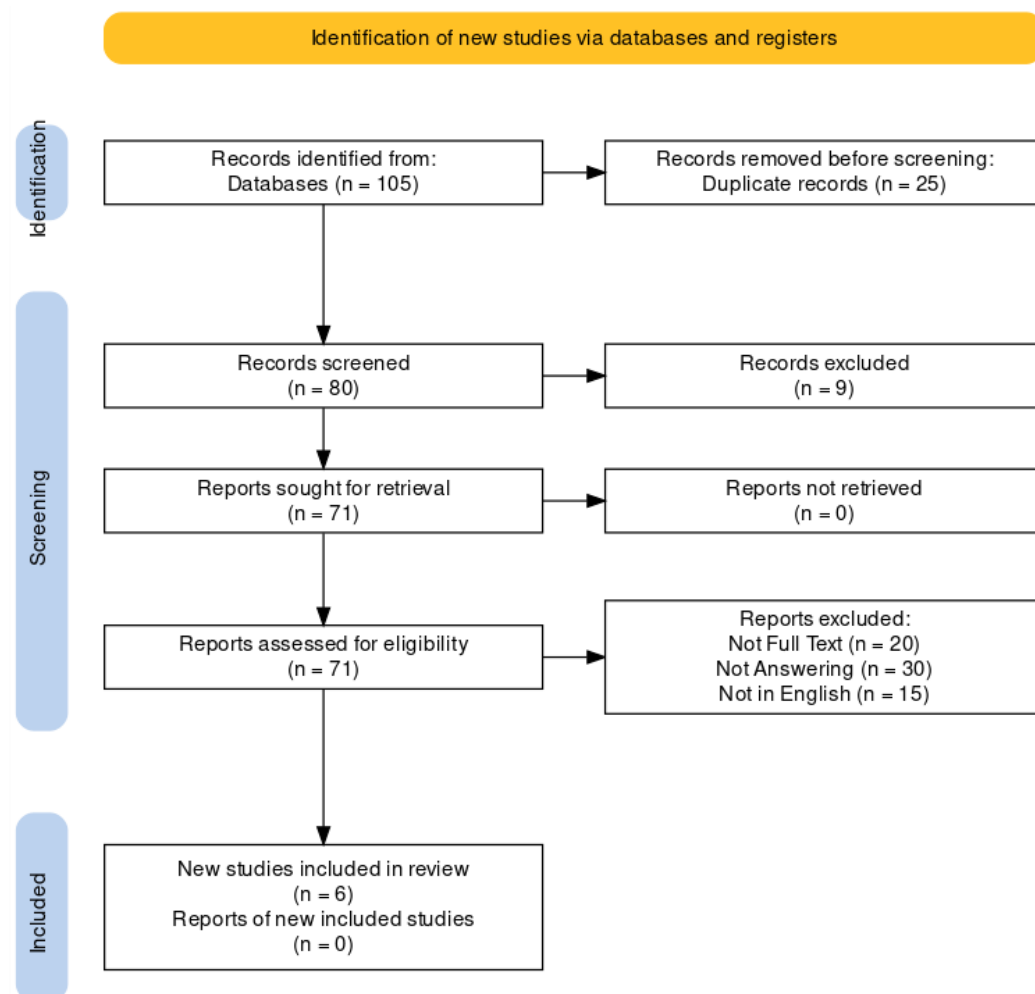

Figure 1. PRISMA Diagram of studies

Table 1. Summarised the study characteristics of the 6 studies

Author	Design	Sample	Objective	Result
Cirigliano et al, 2022	Original Studies	18	Safety and efficacy of intralesional injections of hyaluronic acid (IIHA) in the treatment of Peyronie's disease	The median penile curvature at baseline was 55. showed a decrease in the angle of curvature by a mean of 13.33 ± 8.57 degrees. A statistically significant improvement in IIEF- Intercourse Satisfaction
Gennaro et al, 2015	Original Studies	83	Evaluate the effectiveness of local treatment with injectable hyaluronic acid (HA) for patients with Peyronie's disease	All treated PD patients had experienced three statistically significant outcomes: reduction in plaque size (-93.7 %, $p < 0.0001$); improvement in penile curvature ($-9.01°$, $p < 0.0001$); and improvement in penile rigidity (mean IIEF score $+3.8$)
Cocci et al, 2022	Cohort Studies	244	Illustrate the clinical outcomes after 2 years of follow-up in patients that received intralesional HA or verapamil for PD.	The median curvature was $25.0°$ at 3 months, For VAS score, the median change in Group A was -4.0 (IQR, -4.0, -5.0, $p<0.01$) after 3 months
Zucchi et al, 2016	Original Studies	65	To assess the efficacy of intralesional injection of hyaluronic acid in patients affected by Peyronie's disease.	Mean plaque size was 10 mm (range ¼ 3e30 mm), mean penile curvature was 30(range ¼ 0e50), and mean IIEF-5 score was 20 (range ¼ 0e25), with slight to moderate erectile dysfunction
Marino et al, 2023	Original Studies	23	Evaluate the safety and the efficacy of a new protocol based on intraplaque injection of cross-linked hyaluronic acid plus modeling and stretching	Nineteen out of 21 patients (90%) showed a reduction in the degree of curvature by a mean of $11.9 \pm 7.3°$. A statistically significant improvement in IIEF - Intercourse satisfaction domain
Fattah et al, 2024	Original Studies	42	Analyze and contrast the effectiveness and safety of intralesional HA in the acute stage of PD with that of verapamil injection	The penile curvature was significantly decreased at 12 weeks after therapy in contrast to baseline in group A ($34.1 \pm 6.77°$ vs. $24.7 \pm 9.72°$, $p = 0.005$), and was significantly decreased at 12 weeks after therapy compared to baseline in group B

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Characteristics of the Study
Population

All studies included in the review focused exclusively on male patients diagnosed with Peyronie's disease who had undergone treatment with hyaluronic acid. The total sample size across these studies was comprised of 475 male patients.

Intervention

All of the research conducted was aimed at evaluating the effectiveness of hyaluronic acid on Peyronie's disease and its associated clinical manifestations. Some of the studies focused on evaluating the impact of hyaluronic acid on Peyronie's disease by measuring plaque size, as seen in the studies by Cirigliano et al., Gennaro et al., and Zucchi et al. Others assessed the reduction in penile curvature, such as in the studies conducted by Zucchi et al., Marino et al., and Fattah et al. Additionally, certain studies, like those by Zucchi et al. and Marino et al., investigated changes in erectile function using measures like the International Index of Erectile Function (IIEF). Only one study discussed the Patient-Reported Impact of Glycemic Outcomes (PIG1 Quest).

Clinical outcomes

Effectiveness of hyaluronic acid in reducing plaque size in Peyronie's disease show indicating a significant therapeutic effect. Cirigliano et al. (13.33%), Gennaro et al. (93.7%) and Zucchi (2mm). Penile curvature present findings regarding the degree of reduction such as Zucchi et al. (decrease 10 mm), Marino et al (11.9 mm), Fattah et al. (9.4 mm). Enhancing erectile function in Peyronie's disease, Zucchi et al. (increase of 1 point), Marino et al. (increase 2.35 points).

Discussion

Hyaluronic acid (HA) is known to counteract the effects of inflammatory cytokines and reduce oxidative stress. In the context of Peyronie's disease (PD), cytokine release and ROS overproduction contribute to the activation of NF-kB (nuclear factor kappa-light-chain-enhancer of activated B cells), leading to collagen overproduction and the formation of penile plaques. Given HA's anti-inflammatory and antioxidant properties, it is hypothesized to have beneficial effects on PD. While local injections of HA have been utilized over the past decade to enlarge the glans penis, our study represents the first attempt to employ HA in the treatment of PD (Cirigliano et al., 2022).

Three studies examining the effectiveness of hyaluronic acid in reducing plaque size in Peyronie's disease offer varying perspectives. Cirigliano et al. (2022) reported a modest decrease of 13.33%. In contrast, Gennaro et al. (2015) observed a substantial reduction of 93.7%, indicating a significant therapeutic effect. Zucchi et al. (2016) provided a different insight, noting a reduction of 2mm in plaque size. These findings collectively suggest that hyaluronic acid may have a varying impact on plaque size reduction, with Gennaro et al.'s study indicating particularly promising results compared to the other studies (Gennaro et al., 2015).

HA possesses anti-inflammatory properties that can help reduce inflammation associated with Peyronie's disease. Inflammation plays a significant role in the development and progression of penile plaques. By reducing inflammation, HA may help limit the growth and size of these plaques. Beside, Excessive collagen deposition is a hallmark of Peyronie's disease and contributes to the formation of penile plaques. HA has been shown to inhibit collagen production, potentially preventing the growth of plaques and reducing their size over time. HA can influence tissue remodeling processes by promoting the degradation of abnormal collagen fibers and facilitating the deposition of new, healthy tissue. This remodeling effect may contribute to the reduction of plaque size in Peyronie's disease (Andrea Cocci et al., 2022).

In exploring the impact of hyaluronic acid on penile curvature in Peyronie's disease, several studies present findings regarding the degree of reduction. Zucchi et al. reported a decrease of 10 mm, indicating a notable improvement in penile curvature. Similarly, Marino et

al. observed a slightly larger reduction of 11.9 mm, suggesting a significant therapeutic effect. Fattah et al. provided further evidence, reporting a decrease of 9.4 mm, supporting the efficacy of hyaluronic acid in addressing penile curvature associated with Peyronie's disease. These studies collectively indicate a consistent trend toward reduction in penile curvature with the use of hyaluronic acid (Favilla et al., 2017).

Penile curvature in Peyronie's disease is often caused by the presence of fibrous plaques within the tunica albuginea of the penis. HA may facilitate plaque remodeling by promoting the breakdown of abnormal collagen fibers and the deposition of new, healthy tissue. This remodeling process could potentially lead to a reduction in plaque size and stiffness, thereby reducing penile curvature (A Cocci et al., 2020). HA is a hydrophilic molecule that attracts and retains water molecules. By hydrating the tissues in the penis, HA may help to soften and loosen the fibrous plaques, making them more pliable and less rigid. This increased flexibility could contribute to a reduction in penile curvature (Virag et al., 2017).

In assessing the effect of hyaluronic acid treatment on erectile function in Peyronie's disease, Zucchi et al. observed a modest increase of 1 point in erectile function scores. Conversely, Marino et al. reported a more substantial improvement, with erectile function scores increasing by 2.35 points. These findings suggest a potential benefit of hyaluronic acid treatment in enhancing erectile function among patients with Peyronie's disease, with Marino et al.'s study indicating a more pronounced improvement compared to Zucchi et al.'s findings.

Peyronie's disease can lead to penile deformity and plaque formation, which may impede blood flow to the penis, resulting in erectile dysfunction (ED). HA treatment, by promoting tissue remodeling and reducing plaque size and stiffness, may improve blood flow to the penis, facilitating erections. PD also has significant psychological impact on affected individuals, leading to anxiety, depression, and reduced sexual confidence. By improving penile curvature and erectile function, HA treatment may alleviate psychological distress and improve overall sexual satisfaction (Capoccia & Levine, 2018).

CONCLUSION

The utilization of hyaluronic acid (HA) in the treatment of Peyronie's disease (PD) presents a multifaceted approach with promising outcomes. HA's anti-inflammatory and antioxidant properties offer potential benefits in reducing inflammation, limiting plaque growth, and promoting tissue remodeling, ultimately contributing to a reduction in plaque size and penile curvature.

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Empty Box Legality as A Form of Democratic Betrayal

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KEYWORDS	ABSTRACT
legality, democraticn betrayal, empty box	The legality of empty boxes in Indonesia's elections raises critical questions about democratic legitimacy and public trust. Empty boxes often symbolize voter dissatisfaction with candidates, reflecting deeper systemic issues within the democratic framework. This study examines the legality and implications of empty boxes, employing a normative juridical approach to analyze legal and political perspectives. Data were collected through a legislative, comparative, and case-based approach, followed by descriptive analysis. The findings reveal that while empty boxes can serve as a form of protest, they also highlight the limitations of political parties in presenting viable candidates. This phenomenon undermines the legitimacy of electoral outcomes and public trust in democratic institutions. By exploring voter behavior, legal frameworks, and historical precedents, this research identifies the empty box phenomenon as a critical challenge to Indonesia's democracy. The study concludes that addressing the root causes of voter dissatisfaction and promoting political competition are essential for safeguarding democratic integrity. This research contributes to the discourse on electoral governance and offers recommendations for strengthening Indonesia's democratic processes.

INTRODUCTION

An empty box in the context of elections refers to a situation where voters do not vote for any candidate and choose to leave the ballot box empty. This phenomenon is often seen as a form of protest or dissatisfaction with the available options. However, the legality and interpretation of an empty box in a democratic system is often debated. In many countries, elections are governed by strict laws stipulating that voters must vote for the candidate. However, the presence of an empty box raises questions about the right of voters to express dissatisfaction with the proposed candidate.

In the book How Democracies Die by (Levitsky & Ziblatt, 2019), it is stated that democracy can die from a coup or die slowly. The death can go unnoticed when it occurs step by step, for example by the election of authoritarian leaders, the abuse of government power and the total suppression of the opposition, including by dominating the nominations in elections.

Whether we realize it or not, democracy is slowly deteriorating. In the context of local elections in Indonesia, one of the things that will bring democracy to a slow death is the emergence of the empty box phenomenon in local elections. The phenomenon of a single candidate against an empty box will again occur in the 2024 regional elections, although the empty box phenomenon is not new, it still surprised the public, triggering a debate about its impact on democracy in Indonesia (Anggraini et al., 2015).

The empty box phenomenon in local elections can be seen from two sides. First, the empty box trend has a negative impact on the future of democracy in Indonesia because the presence of empty boxes shows the lack of competition and transparency in the implementation of regional elections, this condition makes the community have no ideal choice in choosing leaders in the regions. This phenomenon also reflects the failure of the democratic system, which is supposed to present diverse choices for the community in general elections. Democracy should be understood not only as procedural, but also as a system that guarantees healthy competition. A system that guarantees healthy and fair competition. The empty box phenomenon is not only a matter of political technicalities but also about the future of Indonesian democracy.

The democratic process that has been fought for at great cost and full of challenges is now threatened to be "manipulated" by political elites by encouraging the support of political parties in the name of coalitions. Democracy is reflected in the aspects of competition, participation, and freedom of the people in making choices in political contestation, including the opportunity to accept or reject people who will become leaders in a region. Secondly, empty boxes reflect complex political dynamics, where major parties unite in a coalition so that there is little room for other candidates to advance, large political parties in coalition control politics at the local level, but actually on the other hand also show the limitations of political parties in preparing qualified party cadres to compete in local elections.

Entering the reform era, there were changes to the 1945 Constitution. One of which changed the direct election mechanism to elect the president and vice president as well as to fill the seats of the legislative body. The organization of the government adheres to the system of constitutional democracy. The mechanism for filling certain political positions in the government is directly elected by the people. The choice of the mechanism for filling certain political positions by direct election is none other than so that the government formed has broad legitimacy. (Widodo, 2014). When the simultaneous election started the scene in the general election in Indonesia, the polemic of the single candidate phenomenon made the General Election Commission (henceforth KPU) make a decision Number 100/PUU-XIII/2015. The emergence of a single candidate is caused by the existence of dowries from various political parties that are very expensive, and immediately the background of this single candidate pair is a phenomenon in the history of elections in Indonesia. According to the Constitutional Court, Pilkada that is only followed by one pair must be placed as the last effort, solely for the sake of fulfilling the constitutional citizens, after previously attempting earnestly to find at least two pairs of candidates.

Voting participation is one of the needs so that the sustainability of democracy and the political system does not experience obstacles. Elections as the main instrument of democracy are one of the instruments that bridge the people's voice as the owner of sovereignty to give a mandate to someone as a representative of the people or as a ruler who will sit in government. It is not surprising that the issue of high and low participation rates is related to the level of legitimacy and trust of citizens in their representatives or people who are mandated to run the government and issue policies. As part of the sustainability of democracy, the level of voter turnout will also have an impact on who will win elections and govern the lives of many people.

Based on the explanation above, the research problem formulation can be stated: How does the impact of voters who choose empty boxes on the legitimacy of general election results?, and How is the legality and interpretation of empty boxes in a democratic system?

Previous studies have explored various aspects of the empty box phenomenon in elections. Romli (2018) investigated the implications of single-candidate elections and their impact on local democracy, revealing how political elites manipulate electoral processes to maintain power. Yunus (2018) analyzed instances where the empty box outperformed single candidates, highlighting voter dissatisfaction with political parties. Furthermore, Nurhalimah

(2017) examined the polemics of single-candidate elections, emphasizing how the lack of competition erodes democratic values. Despite these insights, limited research exists on the broader implications of the empty box phenomenon for democratic legitimacy and public trust, especially in the context of Indonesia's evolving democratic framework.

The increasing prevalence of the empty box phenomenon in regional elections in Indonesia underscores an urgent need to address its implications for democracy. This trend signals a critical moment for evaluating the legitimacy of electoral outcomes and the public's trust in political institutions. As Indonesia consolidates its democracy, addressing this issue becomes imperative to ensure the integrity and sustainability of its electoral processes.

While previous research has focused on the technical and legal dimensions of single-candidate elections, there is a lack of comprehensive analysis on the broader democratic implications of the empty box phenomenon. Specifically, the interplay between voter dissatisfaction, public trust, and democratic legitimacy remains underexplored.

This study provides a novel perspective by examining the empty box phenomenon as a potential betrayal of democratic principles, rather than merely a procedural anomaly. By integrating legal, political, and sociological perspectives, it offers a holistic understanding of how this phenomenon challenges democratic norms and public trust.

This research aims to analyze the legality and democratic implications of the empty box phenomenon, focusing on its impact on electoral legitimacy and public trust. It seeks to uncover the underlying causes of voter dissatisfaction and explore solutions to strengthen Indonesia's democratic framework.

The findings of this study will benefit policymakers, electoral bodies, and civil society organizations by providing actionable insights into improving electoral laws and processes. Additionally, it will contribute to academic discourse on democracy and electoral governance, particularly in emerging democracies.

This research highlights the need for reforms to address the root causes of voter dissatisfaction and promote healthy political competition. It underscores the importance of fostering transparency, accountability, and inclusivity in electoral processes to restore public trust and uphold democratic values.

RESEARCH METHOD

The research used in writing is normative juridical. The sources of legal materials used in this research are primary legal materials and secondary legal materials. Primary materials used are legal science books. The types of approaches used in this research are legislative approaches, comparative legal research approaches, cases and legal analysis approaches. The data processing method used is the analysis method which is then outlined in descriptive analysis writing.

RESULTS AND DISCUSSION

In the history of elections in Indonesia, voter turnout has often been interpreted as an indicator of electoral success. Elections that have a high level of participation are considered to have undoubted legitimacy. Conversely, if the level of participation is low, it is often associated with the basic question of whether the election results have strong or low legitimacy. It is usually shown in voter behavior, that a high or low level of voter participation depends on who is voting, whether voters who are already rational make choices on the basis of certain considerations, or voters who are more dominated by mobilization, certain incentives or other greater momentary interests. (Indonesia, 2015).

Democracy was originally born from thinking about the relationship between state and law in ancient Greece, practiced in state life in the third century BC until the sixth century AD. At that time, from the point of view of its implementation, the democracy practiced was direct.

This means that the people's right to make political decisions is exercised directly by the people (citizens), acting on agreed procedures. The democracy practiced in ancient Greece disappeared when the Romans were defeated by Western Europeans. Europeans at that time were supported by the power of kings and churches (theocracy). Then in the XIV century, democracy reappeared in Europe. The emergence of democracy was driven by social and cultural changes that emphasized the freedom of reason from various restrictions. This event was called by Europeans with renaissance and reformation. This renaissance arose after the Europeans were involved in the crusade against the Islamic army in the struggle for the city of Yarussalem in the Middle East. (Mahmuzar, 2020)

The history of democracy is also characterized by contradictory interpretations. Ancient notions are mixed up with modern understandings of democracy. Democracy as an idea and as a practice are fundamentally tested, and often contradicted. In terms of ideas, the idea of democracy is intriguing. But historically, the development of democratic thought can also be confusing. Modern democracy is not only faced with internal problems of democracy but also external problems of democracy, because the issue of democracy has crossed national boundaries. The processes of the global economy, environmental problems, as well as the protection of minorities and the disadvantaged, are also of concern to the international community. (Harjono, 2019).

The Impact of Empty Boxes on the Legitimacy of General Election Results

Electoral governance is a combination of two main concepts, namely governance and election. Saheen Mozaffar and Andreas Schedler define electoral governance as a collection of interrelated activities involving rule-making, rule enforcement and rule adjudication (Mozaffar & Schedler, 2022).

The emergence of an empty box coincided with the presence of a single candidate after the revision of Law No. 8 of 2015 into Law No. 10 of 2016 concerning Pilkada. The basis for the change was triggered by the phenomenon of a single candidate in several electoral districts that held simultaneous elections in 2015. This condition overwhelmed the KPU. A similar case occurred again in the second simultaneous elections in 2017. And for the third time the same phenomenon shocked the public in the country, after the third wave of simultaneous regional elections on June 27, 2018. Juridically, this phenomenon does not violate the rules, because the provisions regarding single candidate pairs have been accommodated in Article 54 C of Law No. 10/2016.

Although faced with an empty box, a single candidate must still go through all stages in the Pilkada, so that the single candidate will continue to work to convince voters that he is the right choice for voters. That way, single candidates will continue to campaign and convey their vision and mission even though their opponent is an empty box. Even though it is against an empty box, there is no guarantee that the regional head candidate against an empty box will definitely win.

This empty box phenomenon can occur due to the relationship with elite theory that in regional political contestation, elites to win regional head elections exploit public sources of power which in this study are identical to bureaucratic officials in the regions and also the opinion of the Executive Director of the Association for Elections and Democracy (Perludem) Titi Anggraini revealed that political parties that did not come forward to nominate their cadres were due to political pramagtism because they preferred to build political compromises with incumbents, then get electoral benefits in the form of post-election political compromises rather than using Pilkada as an agenda to test the abilities of cadres and party organizational structures, so they prefer to save their funds for the next election.

General Elections of Regional Heads and Deputy Regional Heads, or often called Pilkada or Pemilukada, are part of the implementation of democracy. Regional Head is a political position in charge of leading and driving the pace of government. The terminology of public

office means that the regional head carries out a direct decision-making function with the interests of the people or the public, has an impact on the people and is felt. Therefore, the Regional Head must be elected by the people and must be accountable for it. Meanwhile, the meaning of political office is that the recruitment mechanism for regional heads is carried out politically, namely through elections involving political elements, namely by selecting the people against figures who are nominating as regional heads. In political life in the regions, Pilkada is an activity whose value is parallel to the legislative elections, proving that the regional head and DPRD are partners. (Bambang Kurniawan & IP, 2019).

Regional Head Elections (Pilkada), which are also part of General Elections (Pemilu), are institutionalized conflicts, or the process of seizing power that occurs in the regions (Surbakti, 2020). The Pilkada Law was made with a long process, which was initially in the form of a Government Regulation in Lieu of Law, then turned into a Law in 2015 that regulates the entire course of Pilkada, including simultaneous Pilkada and Pilkada with one candidate pair, and this Law was revised again in 2016.

In relation to regulations, according to Collins (2012), regulations are rules made by the government or other authorities to control the way things are done or the way people behave. KPU regulations are a natural extension of the law that defines and controls the stages of Pilkada or elections. The function of regulation is to regulate the election organizers in carrying out the election stages. Regulations are designed through certain processes where all organizers and participants are bound and subject to the rules set to achieve a common goal. Usually, if someone violates these rules, there will be sanctions.

Some of the arguments supporting the view that an empty box is a form of betrayal of democracy include:

1. Reduced Participation: an empty box can be seen as a sign of lack of interest or trust in the existing political system, which can reduce overall voter turnout. This can have a negative impact on the legitimacy of the election result.
2. Shifting Responsibility: By voting for an empty box, voters may not feel responsible for the outcome of the election.
3. Threatening Political Stability: If the empty box phenomenon becomes more widespread, it could signal a crisis of confidence in the political system, which in turn could disrupt stability and politics.
4. Losing Constructive Votes: Voters who vote for an empty box will lose the opportunity to cast their vote for a candidate who may be better, albeit not perfect.

The impact of voters who choose empty boxes on the legitimacy of general election results can be seen from several aspects:

1. Public Perception: When the number of empty box votes is high, this can create a perception that the candidates do not meet the expectations of the public. This can undermine the legitimacy of the election results, as the public feels there are no viable options.
2. Legitimacy of the Government: If an elected candidate receives a low percentage of the vote, especially if there are many blank votes, the legitimacy of the elected government may be questioned.
3. Voter Participation: The high number of empty box votes often indicates a high level of dissatisfaction among voters. This can have an impact on participation in subsequent elections, where voters may become apathetic and reluctant to participate.

Indonesia is currently at the stage of consolidating democracy (Satriawan & Mokhtar, 2020) According to Linz and Stephan, one of the reasons is that there is a direct electoral process by the people and is guaranteed in its implementation based on the principles of direct, general, free, and secret, as well as honest and fair, which has implications for the legitimacy of power based on popular votes. According to Linz and Stephan, one of the reasons is that it is characterized by a direct election process by the people and is guaranteed in its implementation

based on direct, general, free, and secret principles, as well as honest and fair, which has implications for the legitimacy of power based on the people's votes.

Legality and Interpretation of Empty Box in Democratic System

The Constitutional Court's decision is in line with Article 1 paragraph (2) of the 1945 Constitution, which reads that sovereignty is in the hands of the people and is exercised according to the Constitution, as interpreted by the Constitutional Court judges on the legality of the single candidate phenomenon in Indonesia. To emphasize the constitutional basis of single candidates, the Constitutional Court's decision states that single candidates are part of the realization of Article 18 paragraph (4) of the 1945 Constitution.

Although the existence of a single candidate has been declared constitutional and guaranteed in the Constitution and the Law, it does not mean that this is a natural and common thing. We must know the reasons behind the phenomenon. There are several symptoms why the phenomenon of single candidates continues to increase in Indonesia, namely the decline in public trust in political parties, high political costs, and avoiding the risk of defeat. Although empirically, the single candidate phenomenon is evidence of empirical democracy that occurs in society and is an unexpected phenomenon in the development of democracy in Indonesia. (Nurhalimah, 2017).

The declining quality of democracy, and the declining level of public trust in political parties, will naturally have an impact on elections, especially regional elections. This is evidenced by the fact that there are fewer and fewer participants participating in regional-level democratic contestation because they are no longer able to produce leaders in the regions. With the sign of the gathering of all parties and becoming one camp in the regional elections, the essence of the checks and balances system has automatically disappeared. (Tóth, 2019).

Empty boxes in general elections have complex meanings and interpretations in a democratic system. Its legality is closely related to electoral regulations and the prevailing socio-political conditions. It is important for policymakers and society to understand the implications of this phenomenon in order to respond wisely in improving the existing democratic system. Discussions about empty boxes can help encourage greater participation and create a political system that is more responsive to people's aspirations.

There are several factors why the phenomenon of a single candidate occurs and continues to increase from year to year, namely, first, the existence of very strong political interests between the incumbent and political parties, therefore political parties carry out a strategy of alliances and coalitions solely to close the gaps and paths of other candidates when they have differences in vision and mission for the benefit of these political parties. (Yunus, 2018). Meanwhile, political parties play a role in winning and/or propping up incumbents because they have high electability, strong bureaucratic resources, institutional strength, and control of various institutions that can influence the public (Romli, 2018). This is a characteristic of an oligarchic government. This is because the leader in nominating himself again uses his power to perpetuate his power, so that anything can be done. (Summers, 1984).

Various cases of single candidates against empty boxes with quite complicated results in the implementation of democratic parties in Indonesia, suggest that the increasing public distrust of candidates carried by political parties, who assume that there are political interests that are ridden, so that they cannot produce leaders with quality and integrity. This distrust has an impact on public participation in elections that prefer empty boxes by trying many ways so that empty boxes are able to outperform the votes of the opposing candidate pair.

Single candidates are a reflection on the history of democracy in Indonesia and at the same time provide a signal to immediately improve by placing democracy in the right corridor to avoid the tyranny of anthropocentric power. However, it should be realized that the concept of democracy will continue to evolve, so that basically the election of a single candidate does not eliminate the essence of democracy itself, but rather a form of state efforts to maintain

popular sovereignty, because the true implementation of a democracy prioritizes the participation of the community with the use of voting rights which is a manifestation of popular sovereignty and has been mandated in the constitution. (Rini, 2016).

In the direct democracy implemented by Indonesia, there are joints of political morality that must be closely held by the Indonesian people. The morality in question is in the election process, that the people's vote is the highest value that must be used as a benchmark in organizing elections. (Leib, 2013). This includes the choice of prospective community leaders because political oligarchy in a country can undermine a government system in a country (Hadiz & Robison, 2013). The single candidate in the post-reform local elections is a sign of the return of neo-oligarchy to the modern democratic system. This is because voters are forced to choose only certain people at the proposal of political parties and do not open other doors for the entry of regional head candidates. The rules made related to the threshold are one of the triggers narrowing the space for public participation in the elections to find and choose quality leaders based on the conscience of the community.

CONCLUSION

Voters who vote for empty boxes can have a significant effect on the legitimacy of election results. A high number of empty-box votes indicates public dissatisfaction with the candidates, which can undermine public confidence in the election result and the legitimacy of the elected government. This creates a challenge for the democratic system to maintain public support. The legality of empty boxes varies across countries, depending on the electoral regulations in place. The interpretation of empty boxes as a form of protest or abandonment demonstrates the complexity of understanding voter rights. In some contexts, an empty box can be a means of voicing dissatisfaction, while in others it is perceived as a betrayal of the voter's responsibility in the democratic process.

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Urgency of Legal Reform for Restructuring Non-Legal Entity Companies

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KEYWORDS	ABSTRACT
legal reform, restructuring, non-legal entity companies	This research discusses the urgency of legal reform related to the restructuring of non-legal entity companies, such as trading businesses (UD), partnerships, and commandite partnerships (CV). The study highlights the legal uncertainties faced by these entities, which hinder their ability to adapt to market dynamics, access financial resources, and engage in strategic restructuring actions like mergers, acquisitions, and separations. Using a normative legal research method, this study analyzes existing legislative frameworks, including overlaps between the Micro, Small, and Medium Enterprises Law (UU UMKM) and the Job Creation Law, which create significant challenges for non-legal entities. The findings reveal that the absence of clear legal guidelines for restructuring leads to hesitancy in strategic decision-making and restricts these entities from accessing vital investment opportunities. The research concludes that comprehensive legal reform is essential to provide clear, specific regulations, establish structured partnerships, and create a conducive business environment for non-legal entities. These reforms will empower businesses to innovate, compete, and sustain growth while enhancing their overall market competitiveness.

INTRODUCTION

A company can be defined as a series of actions taken continuously and transparently, with a specific position, aimed at generating profits for itself. A company can also be understood as a location where production activities take place and where all production factors gather. There are companies registered with government agencies and those that are not. Companies registered with the government have official status as business entities (Pratama, 2018). The term "company" first appeared in Article 6 of the Commercial Code (KUH Dagang), which regulates the recording obligation for each individual conducting business. However, the Commercial Code does not provide an authentic explanation regarding the definition of a company. According to Law No. 3 of 1982, a company encompasses business forms (company) and types of businesses (business), where a company is understood as a business entity conducting activities in the economic sector including finance, industry, and trade continuously, regularly, transparently, and with the aim of obtaining profit or gain (winst oogmerk). This business entity can be operated by individuals, partnerships, or legal entities. Thus, a company is an economic activity involving the purchase of goods for resale or leasing with the intent to generate profit and/or gain (Harahap, 2021; Yohana, 2015).

A company is a business entity with a legal form that indicates the legality of the company in conducting economic activities, as formally reflected in its deed of establishment or business permit. The activities carried out must comply with applicable legal provisions, not contrary to public interest and morals, and not conducted in violation of the law (Nathania, 2023). Business activities take place continuously for a specified period outlined in the deed of

establishment or business permit. Recognition and validation of business activities are carried out by the government through the deed of establishment, the issuance of business permits, and permits for business locations, ensuring transparency in the company's operations. The primary purpose of a business entity is to obtain profit, which is derived based on legality and regulations outlined in the law. Lastly, companies are required to maintain accurate bookkeeping, including the truth of its contents and the legitimacy of supporting evidence needed (As'ari et al., 2019; Muskibah & Hidayah, 2020).

Companies can be categorized into two types: legal entity businesses, such as Limited Liability Companies (PT), and non-legal entity companies, such as Trading Businesses (UD), Partnerships (firme), and Commandite Partnerships (CV). In conducting their business activities, every company is required to have a business permit marked by the creation of a Deed of Establishment before a Notary, except for UD, which is a sole proprietorship and only needs to be registered with relevant government agencies (Khairandy & Terbatas, 2009). The management of both legal entity and non-legal entity companies is not simple. PTs experiencing a decline in profit and business prospects can restructure, which is a reorganization of the company's structure and scale to improve financial conditions, expand the scale of operations, or clarify business focus. Restructuring can be done through several means, namely Merger, Consolidation, Acquisition, and Company Separation (MKAPP) (Hidayat, 2020; Surya & Suyatma, 2014).

The restructuring process for PTs is regulated by Law No. 40 of 2007 concerning Limited Liability Companies (UUPT), and further explained in Government Regulation No. 27 of 1998 concerning Mergers, Mergers, and Acquisitions of Limited Liability Companies. To carry out restructuring, companies must prepare a draft MKAPP that requires the approval of the General Meeting of Shareholders (RUPS) and is documented in the Minutes of the RUPS Decision, prepared by a Notary in the form of a Notarial Deed (Nurfauzi & Djuanda, 2019). Notaries are obliged to attend and supervise the RUPS decision-making process directly. However, this creates a legal vacuum for non-legal entity companies, including micro and small business actors who also want to restructure when facing declining businesses, as there is currently no specific regulation governing restructuring for non-legal entities. Based on this brief description, this research will discuss the urgency of legal reform on the restructuring of non-legal entity companies, as well as the impact of the absence of regulations regarding restructuring for non-legal entity companies specifically and efforts to create legal certainty regarding the restructuring of non-legal entity companies.

In modern economic systems, the restructuring of companies serves as a fundamental mechanism to adapt to changing market conditions and enhance operational efficiency. While Limited Liability Companies (PT) have a robust legal framework for restructuring, non-legal entity companies such as trading businesses (UD), partnerships, and commandite partnerships (CV) face significant barriers due to the absence of specific regulations. These entities play a crucial role in the Indonesian economy, particularly as micro, small, and medium enterprises (MSMEs), yet their potential remains underutilized due to legal uncertainties that hinder their growth and sustainability.

The challenges faced by non-legal entities are exacerbated by overlapping and contradictory regulations between the Micro, Small, and Medium Enterprises Law (UU UMKM) and the Job Creation Law. This regulatory ambiguity creates confusion among business actors, who struggle to navigate the requirements for strategic actions like restructuring. Without a clear legal framework, non-legal entities face significant risks in decision-making, which stifles their ability to innovate and remain competitive. The lack of access to financial resources further compounds these challenges, as investors and financial institutions are reluctant to engage with entities operating under unclear legal provisions.

Addressing these issues requires a comprehensive legal reform that prioritizes the development of specific regulations for non-legal entity restructuring. By creating a clear and cohesive legal framework, policymakers can provide business actors with the tools and confidence to make strategic decisions. Furthermore, structured partnerships between non-legal entities and legal entities or financial institutions can serve as a catalyst for innovation and growth. These reforms are not only essential for the sustainability of non-legal entities but also for the broader economic development of Indonesia.

Previous studies have explored the dynamics of company restructuring and its impact on business performance. Harahap (2021) analyzed the legal frameworks for Limited Liability Companies (PT), highlighting the importance of restructuring in maintaining competitiveness and financial health. Similarly, Pratama (2018) investigated the influence of restructuring on financial performance in banking, emphasizing the role of clear regulations in enabling strategic decision-making. However, existing research has largely overlooked the unique challenges faced by non-legal entity companies, particularly in the context of regulatory ambiguity and limited access to restructuring mechanisms. This study fills the gap by focusing on the specific legal and operational barriers encountered by non-legal entities in Indonesia.

The restructuring of non-legal entity companies is an urgent issue as these entities form a significant part of Indonesia's MSME sector, which contributes substantially to the national economy. The absence of a clear legal framework for restructuring limits their ability to adapt to market dynamics, thereby threatening their sustainability. As global competition intensifies, the need for legal certainty becomes critical to empower non-legal entities to innovate, grow, and compete effectively.

While substantial research exists on the restructuring of legal entities, limited attention has been given to the challenges faced by non-legal entities. The interplay between regulatory ambiguities, limited access to financing, and the absence of a structured legal framework for non-legal entities remains underexplored. This study addresses this gap by providing a comprehensive analysis of the legal and operational challenges faced by non-legal entities in restructuring processes.

This study is unique in its focus on the legal and regulatory challenges of restructuring non-legal entity companies in Indonesia. By examining overlaps between existing laws and the specific needs of non-legal entities, the research offers a novel perspective on how legal reforms can bridge the gap between regulatory requirements and business needs, ensuring a stable and supportive environment for non-legal entities.

The objective of this research is to analyze the legal barriers faced by non-legal entity companies in restructuring and propose a framework for legal reform that addresses these challenges. The study aims to provide actionable recommendations for policymakers, business actors, and stakeholders to enhance the sustainability and competitiveness of non-legal entities.

This research benefits policymakers by offering insights into the legal reforms needed to support non-legal entities. Business actors will gain a clearer understanding of the restructuring process, while academia will find valuable contributions to the discourse on corporate law and governance. Ultimately, the study promotes the growth and sustainability of non-legal entities, contributing to broader economic development.

The findings underscore the need for legal certainty and structured partnerships to empower non-legal entity companies. By implementing the proposed reforms, policymakers can enhance the business environment, foster innovation, and ensure the long-term sustainability of non-legal entities. These changes will not only benefit individual businesses but also strengthen Indonesia's overall economic resilience.

RESEARCH METHOD

The normative legal research method is the method used in legal studies that focuses on the study of documents and legal norms. This method aims to analyze the applicable legal rules and how these rules are applied or interpreted in a specific regulation. In normative legal research, the primary source used is legislation and other legal literature (Marzuki, 2018). This approach is particularly relevant in researching theoretical and conceptual legal issues, such as the urgency of legal reform for restructuring non-legal entity companies and the impact of the absence of regulations on restructuring for non-legal entity companies and efforts to create legal certainty regarding the restructuring of non-legal entity companies. One of the approaches used in this method is the statutory approach and the conceptual approach. The statutory approach involves examining and analyzing various rules that regulate specific issues, such as the Limited Liability Companies Law (UUPT) and related regulations concerning the restructuring of non-legal entities. Through this approach, researchers can analyze and identify the urgency of legal reform regarding the restructuring of non-legal entity companies as well as the impact of the absence of regulations concerning restructuring for non-legal entity companies specifically, and efforts to create legal certainty in restructuring non-legal entity companies.

RESULTS AND DISCUSSION

Urgency of Legal Reform for Restructuring Non-Legal Entity Companies

Legal entities (rechtspersoon) are entities that can hold rights and obligations to perform legal acts just like individuals, own their assets, and can sue and be sued in court. According to Salim HS, a legal entity consists of a group of people who have specific goals, wealth, rights, obligations, and organization. Meanwhile, Wirjono Projodikoro defines a legal entity as an entity that is considered able to act in law and has rights, obligations, and legal relations with other individuals or entities. In Article 1653 of the Civil Code (KUHPerdata), it is also stipulated that legal entities include associations of persons recognized by law as organizations, both those formed by public authority and those established for purposes not contrary to law or morals. From these explanations, it can be concluded that a legal entity is a legal subject that has existence as an entity and is seen as equal to an individual legal subject (natuurlijke persoon) in terms of having rights and obligations to perform legal acts as a business entity established for specific purposes, as long as it does not conflict with laws and regulations, public order, and morals (Sumarna & Solikin, 2018).

Every company established and operated by entrepreneurs certainly has the primary objective of generating profits. The profits obtained by this company not only serve as a source of state revenue through taxes but also function as a tool to improve the welfare of society. Thus, companies play a strategic role in the economy and development of a nation. To achieve these objectives, business actors need to apply the principles of Good Corporate Governance or good corporate governance, which includes strategies for managing companies effectively and ethically. In addition to implementing these principles, companies can also carry out restructuring as one of the strategies to improve performance, develop new strategies, and gain credibility in the capital market. Types of company restructuring consist of four categories: consolidation, merger, separation, and acquisition (Yunika & Madjid, 2017).

Every company established and operated by entrepreneurs has the primary goal of generating profit, which not only serves as a source of revenue for the state through taxes but also means improving public welfare. Thus, companies play a strategic role in the economy and development of a nation. To achieve these objectives, business actors should apply the principles of Good Corporate Governance (GCG) or good corporate governance, which involves effectively and ethically managing companies, thereby creating transparency and accountability in operations (Riani & Nugraha, 2020). In addition to implementing GCG principles, companies also have the option to undertake restructuring as a strategic measure to

enhance performance, develop new strategies, and achieve credibility in the capital market. Company restructuring can be categorized into four main types: consolidation, where two or more companies merge to form a new entity; merger, which involves combining two companies to form a new company with assets and liabilities transferred to the receiving company; separation, where a company separates part of its business to form a new entity or to more clearly focus on a particular market segment; and acquisition, where one company takes over the ownership of shares of another company, granting full control over the acquired company. By implementing various forms of restructuring, companies can adapt to market dynamics, strengthen their competitive position, and enhance their long-term value (Asâ, 2015).

Consolidation occurs when two or more companies merge to form a new company through a merging process, where the merged company will legally cease to exist without undergoing liquidation. The new company resulting from the consolidation will inherit the assets and liabilities of the merged companies. However, the new company must reapply to the Ministry of Law and Human Rights (Kemenkumham) to obtain status as a new legal entity. A merger is a restructuring process involving the combination of two or more companies, where the status of the merged businesses ends legally, and their assets and liabilities transfer to the receiving company. Mergers are often regarded as the simplest and least costly form of restructuring compared to other types. Separation is differentiated into pure separation and non-pure separation. Pure separation occurs when the separation leads to two or more new companies, where all the assets and liabilities of the separating company move to the new entities, and the separating company will cease to exist. Conversely, in non-pure separation (spinoff), only some assets and liabilities are transferred to the new company, while the separating company remains in existence. Acquisition occurs when one company takes control of a portion of the shares of another company, thereby allowing the acquirer to control all aspects of the management of the acquired company. However, acquisitions do not result in a new entity since each company remains operational as legal entities independently.

Then regarding legal entities such as Limited Liability Companies (PT) and cooperatives, they are specifically regulated by Law No. 40 of 2007 concerning Limited Liability Companies (UUPT) and Law No. 25 of 1992 concerning Cooperatives (Cooperative Law). One of the main characteristics of legal entities is the separation of wealth between personal wealth and the wealth of the business entity. This separation aims to prevent personal assets from becoming subject to bankruptcy in case the company goes bankrupt; in this case, only the company's assets will be subject to bankruptcy, unless there is evidence of abuse where company assets are utilized for personal benefit. Conversely, non-legal entity companies, such as trading businesses (UD) and partnerships (CV, firma, maatschap), do not possess specific legal regulations similar to those governing legal entities, but are instead governed by the Civil Code (KUHPerdata) and the Commercial Code (KUHD). The characteristic of non-legal entity companies is the blending of company assets with personal assets, meaning that in cases of bankruptcy, personal property might also be entangled as an object of bankruptcy.

One of the primary characteristics of legal entities is the existence of a division of wealth between personal assets of the owners and the assets of the business entity itself, which serves to protect personal property from the risk of a company's bankruptcy; in this case, only the company's assets will be the object of bankruptcy unless there is evidence of abuse that results in company assets being used for personal interests. In contrast, non-legal entity companies such as trading businesses (UD) and partnerships (CV, firma, maatschap) lack specific legal regulations that govern their operations, thus falling under the realm of the Civil Code (KUHPerdata) and the Commercial Code (KUHD). The distinctive feature of non-legal entity companies is the blurring of asset ownership between the company and private property, resulting in greater risks for the owners; in bankruptcy situations, personal assets of the owners can be regarded as subjects of bankruptcy and may be used to settle the company's debts. This

highlights the fundamental differences in legal protection between legal entities and non-legal entities, along with significant implications on the financial responsibility of business actors within each type of company.

In managing their businesses, companies always strive to avoid crises. When business actors realize there is potential for declining business prospects, they will take steps to heal the company, one of which is through restructuring. Restructuring is defined as "a substantial change in the business strategy or financial structure of a poorly performing company." Thus, restructuring can be understood as a reorganization that encompasses business strategy and financial structure to realize the company's vision and mission. It is crucial to distinguish between company restructuring and debt restructuring, where company restructuring focuses on reorganizing the form and scale of the company, while debt restructuring refers to the reorganization of debts recorded on the balance sheet (assets and liabilities) to enhance the company's financial health. Both can be performed separately or simultaneously.

Company restructuring can be conducted through various means, including Merger, Consolidation, Acquisition, and Company Separation (MKAPP), along with other options such as liquidation, bankruptcy, asset revaluation, and reorganization. According to the Explanation of Article 43 paragraph (3) letter c of Law No. 40 of 2007 concerning Limited Liability Companies (UUPT), MKAPP includes mergers, consolidations, acquisitions, or company separations. Provisions regarding MKAPP for Limited Liability Companies are governed under Articles 122 (1), 125 (1), and 135 (1) of UUPT, along with implementing regulations included in Government Regulation No. 27 of 1998. Meanwhile, for cooperatives, MKAPP is governed by the Cooperative Law and the Ministerial Regulation of the State for Cooperatives and SMEs No. 19/Per/M.KUKM/XI/2008 regarding Guidelines for Implementation of Loan Activities by Cooperatives.

Thus, both legal entities and cooperatives have specific legal frameworks in conducting restructuring to enhance efficiency and competitiveness in the market. According to Article 1, number 9 UUPT along with Article 1, number 1 of Government Regulation 27 of 1998, a merger refers to the legal act in which one or more corporations merge into an existing corporation, resulting in the transfer of the corporation's assets and liabilities legally to the receiving corporation, and the merging corporation will dissolve. The merger process is carried out with the approval of the General Meeting of Shareholders (RUPS), documented in the Merger Deed prepared by a notary, and requires validation from the Ministry of Law and Human Rights (Kemenkumham). Consolidation, as described in Article 1, number 10 UUPT along with Article 1, number 2 of Government Regulation 27 of 1998, involves two or more corporations merging to form a new corporation, with each merging corporation legally dissolving, and the assets and liabilities of the merging corporations transferring to the newly formed corporation. The consolidation procedure follows the RUPS provisions and requires a Consolidation Deed prepared by a notary and validation from Kemenkumham.

Acquisition, according to Article 1, number 1 UUPT along with Article 1, number 3 of Government Regulation Number 27 of 1998, refers to the legal act where a legal entity or individual takes over some or all of the shares of a corporation, leading to the transfer of control over the corporation. Acquisition must comply with the provisions in Articles 125 and 128 UUPT, and can occur through two mechanisms: first, through the Corporation's Directors, requiring the approval of the General Meeting of Shareholders documented in an Acquisition Deed; second, through shareholders, also requiring approval for the transfer of share rights to be granted by the Minister of Law and Human Rights.

Separation, as explained in Article 1, number 12 UUPT, is a legal act undertaken by corporations to separate their business operations, resulting in the transfer of all assets and liabilities to two or more corporations, or some being transferred to one corporation. Separation can be classified into two types:

1. Pure Separation (Split Off), where all assets of the company are transferred to two or more new companies resulting from the separation, and the original company (removed).
2. Non-pure Separation (Spin-Off), where only part of the company's assets is transferred to the new company resulting from the separation, while the original company still exists.

For non-legal entity companies, there are no specific regulations governing their operational guidelines; thus, they are regulated under the Civil Code (KUHPerdata) and the Commercial Code (KUHD). A Trading Business (UD) is a form of sole proprietorship run by an entrepreneur with self-owned capital. It is not specifically regulated in law but recognized in practice as a business entity. In a UD, all assets are owned by one person who is fully responsible for all company debts. The establishment of UD does not require a Notarial Deed, since it is a sole proprietorship and needs only to be registered with the appropriate government authorities. Partnerships are regulated under Articles 16 to 35 of the Commercial Code, representing a civil partnership established to conduct business under the joint name of the partners. According to Yahya Harahap, partnership is a collaborative form of agreement among individuals in terms of professions or trading. Every partner in a partnership is jointly responsible for the legal actions carried out by other partners, as described in Article 18 of the Commercial Code. The establishment of a partnership must be done through an Authentic Deed before a notary, which must be registered with the Clerk of the District Court, as specified in Articles 22 and 23 of the Commercial Code.

The Commanditaire Vennootschap (CV) is not clearly regulated in the Civil Code or the Commercial Code but falls under the category of partnerships according to Articles 19 to 21 of the Commercial Code, which consist of limited partners (passive) and general partners (active). According to Article 1618 of the Civil Code, it stipulates that two or more individuals agree to contribute something to the partnership with the intention of sharing the resulting profits. Therefore, the establishment of a CV must be through an Authentic Deed before a notary and registered with the Clerk of the District Court, following the same procedures as partnership establishments. A Civil Partnership (Maatschap), as outlined in Article 1618 of the Civil Code, is accordingly an agreement between two or more individuals committing to contribute and share profits. The elements of civil partnership include a reciprocal agreement, contributions of money, goods, or services, and the intention to share profits among the partners. Based on Articles 1620 to 1623 of the Civil Code, a civil partnership may be categorized into general and special partnerships, with general partnerships involving partners contributing assets with their respective shares, while special partnerships involve agreements to provide specific items or services.

Based on the explanations provided, non-legal entity companies lack specific regulatory frameworks in legislation, including in restructuring. This creates a legal vacuum when Trading Businesses (UD), Commanditaire Vennootschap (CV), Partnerships, or Maatschap strive to restructure through mergers, consolidations, acquisitions, and company separations (MKAPP), as is applicable for Limited Liability Companies (PT). In this case, the Law on Micro, Small, and Medium Enterprises (UU UMKM) and the Job Creation Law provide alternatives for company development targeting MSMEs, including UD, CV, and partnerships, through partnership patterns. This partnership pattern is outlined in Article 26 of the UMKM Law alongside Article 26 of the Job Creation Law, covering various forms such as core-plasma patterns, sub-contracting, franchises, general trade, distribution, agency, supply chains, and other forms of partnerships. In principle, the partnership pattern involves financial contributions, technical support in production and marketing, technological improvements, as well as guidance and training to foster business development. Partnership agreements made by MSMEs must be recorded in written form, as provided in Article 34 of the UMKM Law, which includes detailed aspects concerning business activities, rights and obligations of each party, forms of development, duration, and resolution of disputes. Hence, partnerships can be

formalized in informal deeds or official deeds drafted before a notary.

Despite the absence of specific regulations regarding restructuring for non-legal entity companies, these companies can still carry out MKAPP with other non-legal entities. Changes in business forms and ownership of non-legal entity companies can be processed through local governments, particularly the Trade and Industry Office, without the need for validation from the Ministry of Law and Human Rights (Kemenkumham). In this case, Article 153C of the Job Creation Law states that changes in the establishment declaration for Micro and Small Enterprises are set through the RUPS and must be electronically notified to the minister, with technical provisions regulated in yet-to-be-determined governmental regulations. This indicates that changes in the establishment declaration made by non-legal entity companies can have significant legal consequences, as restructuring through MKAPP can be executed with the approval of the RUPS documented in an authentic deed by a notary, and notification of approval sufficient when carried out electronically to the minister, rather than to local governments.

Thus, the legal vacuum concerning the regulation of non-legal entities has resulted in overlapping between the UMKM Law and the Job Creation Law, creating legal uncertainties in the business operations of non-legal entities. Legal certainty, according to Gustav Radbruch, consists of two aspects: legal certainty through the law (legal justice that must bring benefits) and legal certainty within the law (law stated in various legislative regulations). The legal vacuum related to non-legal entities leads to overlaps between the Micro, Small, and Medium Enterprises Law (UU UMKM) and the Job Creation Law, which in turn, creates legal uncertainties in business activities conducted by those entities. This ambiguity has the potential to hinder the capacity of non-legal entities, such as Trading Businesses (UD) and partnerships (CV, firma, maatschap), to operate efficiently and comply with applicable regulations. Legal certainty is critical for maintaining justice and order in business operations, as highlighted by Gustav Radbruch, who stated that legal certainty encompasses two dimensions: first, legal certainty by the law, which emphasizes beneficial legal justice for society; and second, legal certainty within the law, which refers to the existence of clear and detailed laws in various legislative frameworks. Without adequate legal certainty, non-legal entities risk facing challenges in managing their businesses and ensuring compliance.

Impact of the Absence of Regulations on Restructuring for Non-Legal Entities and Efforts to Create Legal Certainty Regarding Restructuring Non-Legal Entities

Non-legal entity companies, such as trading businesses (UD), partnerships, and commandite partnerships (CV), often face significant legal uncertainties, especially concerning restructuring. Unlike legal entities that have clear regulations in the law, non-legal entity companies lack a specific legal framework to regulate their restructuring processes. This ambiguity leads to serious doubts in strategic decision-making by business actors. For instance, when a non-legal entity company considers making structural changes or transferring ownership, they may be unaware of the required legal procedures or conditions, which can lead to inappropriate or even detrimental decisions.

The situation becomes even more complex when non-legal entity companies encounter rapidly changing market conditions or pressing financial challenges. In such circumstances, business actors need to act quickly and decisively, but legal uncertainties can hinder their ability to respond efficiently. They may hesitate to engage in restructuring actions such as acquisitions, mergers, or even liquidations due to concerns over unclear legal implications. This uncertainty not only limits flexibility in decision-making but can also negatively affect the reputation and credibility of the enterprise in the eyes of business partners, investors, and consumers. Additionally, this legal uncertainty influences the access of non-legal entity companies to financial resources. Investors and financial institutions tend to avoid high risks associated with regulatory ambiguities. When non-legal entities cannot demonstrate certainty regarding their structure and management, potential investors may be reluctant to provide the necessary capital

or financial support for restructuring. As a result, companies may find themselves forced to endure unfavorable conditions, exacerbating the risk of bankruptcy and hindering their long-term growth.

Limited access to capital is one significant impact of the absence of a clear legal framework for non-legal entity companies, such as trading businesses (UD), partnerships, and commandite partnerships (CV). In business, capital is crucial for development and growth. However, without clear regulations regarding restructuring or company management, investors and financial institutions are often hesitant to extend financial support. They typically seek legal certainty to ensure that their investments will be safe and accountable. Ambiguity regarding the legal structure of non-legal entity companies creates apprehension for investors regarding the potential risks they may encounter. For example, investors may question how ownership structures function in instances of management alterations, bankruptcies, or restructuring. Lacking clear provisions about the rights and obligations of each party, investors feel less secure in committing their funds, thus diminishing the company's prospects for obtaining the necessary financing.

Limited access to capital also affects the ability of non-legal entity companies to innovate and compete in the market. In an era of rapid globalization, companies must adapt to changing market needs and new technologies. However, without adequate financial support, non-legal entity businesses may be unable to invest in developing new products, enhancing service quality, or expanding market reach. This limitation will hamper their competitiveness and could result in the loss of valuable business opportunities. This becomes more urgent when non-legal entity companies face financial crises or challenges. In emergencies, they often require quick financing to maintain operations or undertake restructuring. However, if investors remain uncertain about legal aspects concerning the company, they may delay investment decisions or even withdraw their support. This can leave non-legal entity companies trapped in a cycle of debt that is difficult to recover from, worsening their financial and operational positions.

Regulatory overlaps are a serious issue faced by non-legal entity companies, especially concerning restructuring procedures. Ambiguities around applicable rules and provisions can lead to confusion among business actors. For example, between the Micro, Small, and Medium Enterprises Law (UU UMKM) and the Job Creation Law, provisions can conflict, particularly regarding financing and partnerships. This creates difficulties for business actors to understand which regulations to follow and how to correctly execute procedures in the restructuring process. As a result, entrepreneurs such as trading businesses (UD), partnerships, and commandite partnerships (CV) face uncertainty when making strategic steps to improve or develop their businesses. Without clarity on which regulations to refer to, entrepreneurs may hesitate to implement necessary restructuring plans, potentially getting caught in situations where decisions made risk violating one of the existing regulations, which could lead to sanctions or other legal consequences. This uncertainty generates an unproductive environment for growth and innovation. Regulatory overlaps can exacerbate market uncertainties. Investors, banks, and other financial institutions typically avoid investing in companies operating under unclear legal frameworks. When existing regulations contradict each other, it worsens the perception of risk faced by stakeholders, negatively impacting non-legal entity companies' capacity to attract the necessary investment. Consequently, companies may miss significant opportunities to enhance operational capacity and effectively compete in the market.

The drafting of specific regulations governing the procedures and provisions for restructuring non-legal entity companies is a crucial step that the government must take to create legal certainty and facilitate business development in this sector. Specific regulations will provide clear guidance to business actors, such as trading businesses (UD), partnerships, and CVs, about the steps that must be taken in the restructuring process, including administrative procedures, eligibility criteria, and rights and obligations that must be adhered to. With a clear

legal framework, business actors will be more confident in making strategic decisions and find it easier to access financing and investments since investors tend to be more inclined to invest in businesses that have legal certainty. This regulation can help eliminate overlaps with existing regulations such as the UMKM Law and Job Creation Law, thereby creating a more stable and predictable business environment. Therefore, it is important for the government to involve stakeholders, including business actors, in the process of drafting this regulation to ensure that the resulting policies are relevant and acceptable to all parties involved.

Developing a structured partnership model between non-legal entity companies, such as trading businesses (UD), partnerships, and CVs, with legal entities or financial institutions is critical for enhancing the effectiveness of restructuring in this sector. The proposed partnership model must be designed to provide comprehensive legal and financial support for non-legal entity companies, including access to funding, managerial training, and legal guidance in restructuring implementation. In this partnership framework, legal entities or financial institutions can act as mentors, offering strategic and technical advice and aiding in the development of a sustainable business plan that is eligible for investment support. Furthermore, this partnership can also strengthen the bargaining power of non-legal entity companies in the market, as they can combine resources and expertise with their partners, creating a synergy that benefits both parties. With the presence of a structured partnership model, it is expected that non-legal entity companies will be better prepared to face challenges in restructuring processes and improve their competitiveness in the market, leading to sustainable growth.

CONCLUSION

The absence of a clear legal framework for non-legal entity companies, such as Trading Businesses (UD), Commanditaire Vennootschap (CV), and partnerships, has created significant challenges, particularly in restructuring processes and legal protections. The regulatory overlaps between the Micro, Small, and Medium Enterprises Law (UU UMKM) and the Job Creation Law contribute to legal uncertainties, hindering strategic decisions like mergers, acquisitions, or liquidations. This uncertainty limits access to financial resources and innovation opportunities, placing non-legal entity companies at a disadvantage compared to legal entities protected under the Limited Liability Company Law (UU PT) and the Cooperative Law. To address these issues, the government must establish specific regulations that clarify restructuring procedures, provide robust legal protections, and encourage partnerships between non-legal entity companies and legal entities or financial institutions. These efforts, combined with support in the form of financing, training, and market access, will enhance the competitiveness and sustainability of non-legal entity companies, empowering them to adapt to dynamic market conditions while reducing legal risks.

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