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OPTIMIZATION OF HEAVY FORCES FOR HUMANITARIAN MISSIONS AND EMERGENCY RESPONSE

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Abstract. Climate change increases the frequency of disasters, while access to remote areas remains a challenge. In military operations other than war (OMSP), the Army played a role in disaster management. High-mobility troops can be optimized for evacuation, distribution of assistance, and emergency responses that are faster and more effective. Previous research discussed more the role of cavalry in military aspects and state events, while the study of cavalry optimization in non-war operations, especially humanitarian missions and disaster response, is still limited. To fill this gap, this research evaluates the effectiveness of the horsemen in emergency response operations in areas difficult to access. This study uses the Mixed Methods Explanatory Sequential Design approach, qualitative analysis with NVIVO 12, and quantitative uses SEM-PLS 4. NVIVO 12 analysis revealed that the main factors in optimizing horse troops include increasing mobility, accessibility, coordination between agencies, and modernization of equipment and training. SEM-PLS 4 results show that cavalcaded troops have a significant influence on evacuation, distribution of aid, and emergency response that is faster and more effective with the coefficient of pathway 0.529 (T-statistics 3.932; P-value 0.000). This study recommends the integration of cavalry troops, especially cavalry in the national disaster response policy, but the importance of improving infrastructure, modernization of equipment, and special training to increase operational effectiveness.

Keywords: disaster response; cavalry optimization; emergency mobility; humanitarian missions; military operations other than war.

I. INTRODUCTION

Cavalry (cavalry) is part of the Army Corps, which has a unique role in military operations, especially in terrain that is difficult to reach by motorized vehicles[1]. In the context of humanitarian missions and emergency responses, the optimization of the cavalry refers to efforts to increase the effectiveness, efficiency, and adaptability of this unit in helping the community affected by disasters or crises [2]. This optimization includes aspects of training, technology, and synergy with related institutions to ensure fast and appropriate responses in an emergency situation[3]. The cavalry in the Indonesian Army Cavalry Unit has advantages in difficult mobility in Medan, such as mountains, dense forests, and areas affected by disasters where motorized vehicles are difficult to operate [4]. Horses as a means of transportation are not only able to reach remote areas more easily but are also more environmentally friendly than motorized vehicles that require adequate fuel and road infrastructure [5]. In the humanitarian mission and emergency response, optimization of horse troops is an important strategy to increase effectiveness and efficiency in the distribution of assistance, evacuation of victims, and security of post-disaster areas. By improving personnel skills in horse control, the use of technology in navigation and communication, as well as strengthening coordination with relevant agencies such as BNPB and regional governments, horsemen can be a vital component in the national disaster response system[6]. More than just a tactical unit, cavalry troops have a strategic value in a quick response to an emergency situation. In the condition of natural disasters, transportation paths are often disrupted, while access to air and heavy vehicles can take time. The superiority of the cavalry in flexibility and adaptability makes it ideal for rescue operations in a dynamic and uncertain environment. In addition, synergy with humanitarian institutions and the use of modern technology, such as GPS systems and portable radio communication, can increase speed and accuracy in the distribution of assistance and information in the field[7]. Therefore, the optimization of the cavalry troops is not only relevant in the perspective of military operations but also within the framework of public administration that demands the effectiveness, efficiency, and cross-sectoral collaboration in disaster management [8]. Research Urgency. Indonesia, as an archipelago with a variety of topography, has many areas that are difficult to access by motorized vehicles, especially when there are natural disasters such as earthquakes, floods, and landslides. In these conditions,

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horsemen can be an effective solution to reach remote areas to channel assistance, evacuate victims, and support post-disaster recovery operations[9]. However, currently not many studies have examined how the horsemen can be optimized in the context of humanity and emergency response, so this study is important to fill the research gap and offer models that can be applied by the Indonesian Army [3]. This study is based on several major theories relevant to the optimization of horsemen in humanitarian missions and emergency response. The first theory is the Disaster Response Theory, which explains how the actors in the emergency response system coordinate to respond to disasters quickly and effectively. The second theory is adaptive logistics theory, which highlights the importance of flexibility and mobility in the logistics system, especially in emergency situations. In addition, this research also refers to the Public Administration Theory, which discusses governance and policies in coordination between agencies to support emergency response operations [2]. Several studies have discussed the role of horsemen in the context of military and defense, but very few highlighted their potential in humanitarian missions and emergency response. Smith et al. (2018) discuss the use of cavalry in modern combat operations, while research by Williams (2020) examines the role of horsemen in border patrol operations. In Indonesia, several studies have discussed the disaster response strategy by the TNI, but no one has specifically highlighted the contribution of the horsemen in this context. Therefore, this research offers a new perspective by integrating the horsemen in the National Emergency Response System [10]. Novelty This study lies in the mixed-methods approach used to explore the optimization of horse troops in humanitarian missions and emergency response. The quantitative approach will be used to measure the effectiveness of horse troops compared to other units in an emergency situation, while a qualitative approach will explore the experience and challenges faced by the horsemen in humanitarian operations. In addition, this research will develop a model of the integration of horse troops in the National Emergency Response System, which has not been widely reviewed in previous research [11]. This study aims to analyze the potential and effectiveness of horse troops in the humanitarian mission and emergency response in Indonesia, as well as identify the challenges and obstacles encountered in its operation (Gassmann, 2021). In addition, this research seeks to compile a model of optimization of horse troops that can be applied by the Indonesian Army in disaster response operations, as well as provide strategic recommendations for policymakers related to the integration of horse troops in the national disaster management system. With a comprehensive approach, this research is expected to make a significant contribution to the development of an emergency response strategy in Indonesia and strengthen the role of the cavalry in supporting the main tasks of the Army [12].

II. RESEARCH METHODS

This research uses Mixed Methods Explanatory Sequential Design. Methods Explanatory Sequential Design to find out the main pattern and research theme with the topic of "Optimization of Horse Troops for Humanitarian Mission and Emergency Response." Data collection techniques are carried out first with discussions. 35 postgraduate students of the Defense University Doctoral Program. Qualitative method The run query feature is visualized using Word Cloud NVivo 12, and the last step is the interpretation of the word cloud NVivo 12[13]. Quantitative Method, Data Collection by distributing questionnaires to 35 postgraduate students of the doctoral program of defense sciences to see the effect of the optimization of the horse housing to contribute to the humanitarian mission and emergency response, the sample technique uses random sampling. Data analysis techniques using partial square square software (SEM PLS)[14]. Measurement in the model in PLS consists of a measurement model, also called an external model; structural models, also called internal models; and goodness and suitable models. Evaluation of external models (measurement model). The validity test in PLS analysis uses the size of the loading factor or loading. The outer loading size is the statistical size used to see the level of indicator used to reflect the measurement of variables or valid indicator levels in the measurement variable, which is recommended at 0.70. The reliability test in PLS analysis using the alpha value and composite reliability (CR) Cronbach is 0.70. Convergent validity values are measured using the extracted average variant (AVE); recommended at least 0.50. Discriminant validity is measured by the criteria for Fornell-Larcker. The Fornell-Larcker criterion is if Root Ave > Correlation between variables. HTMT Criteria (Heterotrait Monotrait Ratio), which is a heterotrait ratio (average correlation between different variable measurement items) with monotrait geometric multiplication roots (correlation between items measuring the same variable). The HTMT value received is below 0.90, which shows an evaluation of discriminant validity is accepted. Evaluation of Structural Model (Inner Model). This evaluation is related to hypothesis testing, namely the path coefficient testing/path coefficient and the level of significance[15]

III. RESULT AND DISCUSSION

A. Qualitative data analysis with NVivo 12

Figure 1. Cavalary

In Figure 1 above, it shows that the cavalry in the TNI AD Cavalry Unit has a significant advantage in difficult mobility in Medan, such as mountains, dense forests, and disaster-affected areas that are difficult to reach by motorized

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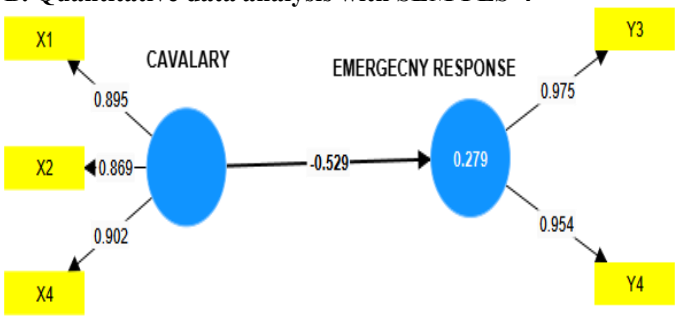
vehicles. In the context of climate change, the frequency and intensity of natural disasters such as floods, landslides, and forest fires increase, demanding a more flexible and adaptive emergency response[16]. Heavy forces can be an effective solution in channeling humanitarian assistance, evacuating victims, and From the perspective of public services, the integration of horse troops in humanitarian operations not only increases the efficiency of logistics distribution and health services in remote areas but also strengthens the presence of the country in this matter through the Army in ensuring community safety. Therefore, the optimization of the role of emergency troops in emergency response can be part of a continuous climate change adaptation strategy and increase the effectiveness of public services in disaster-prone areas[17].

Figure 2. Word Cloud Nvivo 12

Analysis using Nvivo 12 produces a word cloud that represents the words that most often appear in research titled Optimization of Horse Troops for Humanitarian Missions and Emergency Response. Words with a larger size in the picture show a higher frequency of appearance, indicating that these aspects have a central role in academic discussions and analysis related to this research topic. From this word cloud, the words "troops," "cavalry," and "TNI" dominated, showing that this research was very focused on the involvement of horsemen in the humanitarian mission and emergency response operations conducted by the Indonesian National Army (TNI)[18]. This confirms that the horse troops are considered a strategic element in non-war military operations, especially in an emergency situation that requires high mobility in a difficult Medan. In addition, words such as "humanitarian," "disaster," and "response" strengthen the argument that cavalcaded forces have great potential in supporting humanitarian operations, especially in natural disaster scenarios. In geographical conditions that are difficult to reach by motorized vehicles, cavalry can be an effective solution to reach affected areas, especially those that have limited access due to disasters such as earthquakes, floods, or landslides[19]. The existence of the words "mobility," "speed," and "accessibility" shows that the speed and ability to reach remote areas are the main advantages of the horsemen. In the perspective of disaster management, high accessibility is very crucial to provide assistance as quickly as possible to the victims. Thus, the optimization of the role of the cavalry can contribute to increasing the efficiency and effectiveness of emergency response operations. Terms such as "coordination," "resources," and "communication" indicate that the success of the cavalry in humanitarian missions does not only depend on their physical abilities and mobility but also on synergy with other stakeholders[20]. Good coordination with government agencies, non-governmental organizations (NGOs), and local communities is needed so that the aid operation runs smoothly and on target[21]. In addition, words such as "equipment," "technology," and "training" highlighted the importance of modernization and readiness of the horsemen. To be more effective in humanitarian operations, horse troops must be equipped with sophisticated communication equipment and GPS-based navigation systems, as well as special training in terms of emergency response and evacuation of victims. With better technological integration, cavalry forces can operate more efficiently in various disaster scenarios. Overall, this word cloud provides a clear picture of how the horsemen can be optimized in the humanitarian mission and emergency response. Taking into account the mobility, accessibility, coordination, and modernization of equipment and training factors, cavalry can be a strategic asset in non-war operations, especially in geographical contexts such as Indonesia, which often experience natural disasters and have many remote areas that are difficult to reach by conventional vehicles[22].

B. Quantitative data analysis with SEM PLS-4



Based on the results of the outer loading in the SEM-PLS 4 analysis in the picture above, it appears that all indicators have a value above 0.7, which shows that these indicators have good convergent validity of the measured construct. For example, the X1, X2, and X4 indicators have an outer loading value of 0.895, 0.869, and 0.902, which means they have a strong contribution to the latent constructs they represent. Similarly, the Y3 and Y4 variables that have an outer loading value of 0.975 and 0.954 show that the two indicators are very representative of the construct. However, the relationship between constructs shows the coefficient of -0.529 between two latent constructs, which indicates a negative and strong relationship, while the second construct has a value of 0.279, which shows a weaker influence. From the perspective of the SEM-PLS model analysis, the validity and reliability of the model can be considered as good because all outer loading values are above the minimum limit of 0.7, which shows that these indicators are strong enough to explain each latent variable. However, the relationship between negative constructs (-0.529) needs to be analyzed further because it can show that changes in the first construct have an impact opposite to the second construct. In addition, the value of 0.279 indicates that there is a weak influence between two latent variables, which may indicate the need for a revision of the model or consideration of the mediation/moderation variable to explain a clearer relationship[23].

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Table 1. Outer Loadings

Indicator	CAVALARY	EMERGECNY RESPONSE
X1: Mobility and Accessibility <- Cavalary	0.895	
X2: Training and readiness of personnel <- Cavalary	0.869	
X4: Technology and Equipment Support and Coordination with stakeholders <- Cavalary	0.902	
Y3: Response Speed and Coverage of Assistance <- Emergecny Response		0.975
Y4: Operational Efficiency and Sustainability and Long -Term Impact <- Emergecny Response		0.954

Outer loading analysis results show that all indicators have a value above 0.7, which indicates that each indicator has a strong contribution in explaining its latent construct. For the Cavalry construct, the Mobility and Accessibility Indicator (X1) has an outer loading of 0.895, training and readiness of personnel (X2) of 0.869, and Technology and Equipment Support and Coordination with Stakeholders (X4) of 0.902. Meanwhile, the Emergency Response construct, the Speed and Coverage of Assistance (Y3) response indicator, has a value of 0.975, and the operational efficiency and sustainability and long-term impact (Y4) has a value of 0.954. These values indicate that these indicators have a very strong relationship with the construct they represent, so it can be said that this model has good convergent validity. From the perspective of the Disaster Response Theory, the high outer loading on indicators related to Cavalry stressed that mobility and personnel readiness, as well as technology and coordination support, are important factors in optimizing the emergency troops in emergency response. This theory emphasizes the importance of rapid and efficient coordination between various actors in the emergency response system, and the results of this study indicate that cavalry troops have high capabilities in supporting rapid responses to disasters. With a high outer loading value, it can be concluded that the horsemen are able to make a significant contribution in ensuring high mobility and readiness in humanitarian operations. If it is associated with adaptive logistics theory, the high value of outer loading on mobility and accessibility indicators and technology and equipment support indicate that the logistics system applied by horsemen has a high level of flexibility and adaptability. In the context of emergency response, this theory highlights the importance of a logistics system that can quickly adjust to dynamic field conditions. The results of this study indicate that the horsemen have great potential in supporting the adaptive logistics system, especially in emergency situations in remote areas or difficult terrain that cannot be accessed by modern vehicles. In addition, in the perspective of the Public Administration Theory, the high value of the outer loading on indicators related to emergency response shows that the rapid response and broad scope of assistance are strongly influenced by the effectiveness of governance and coordination between instances. With a value of 0.975 in the Response Speed and Coverage of Assistance and 0.954 on the Operational Efficiency and Sustainability, it can be said that the coordination system in the emergency response operation with the horse-housing troops has been going well. This indicates that policies that support the integration of horse troops in emergency response operations need to continue to be developed to increase the overall effectiveness of the disaster response system[24].

Table 2. Contruct Reability and Validity

Construct (latent variable)	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CAVALARY	0.869	0.896	0.919	0.790
EMERGECNY RESPONSE	0.927	0.990	0.964	0.930

The results of the analysis of construct reliability and validity show that both constructs, namely cavalry and emergency response, have excellent reliability and validity. The Cronbach's Alpha value for Cavalry is 0.869, and for Emergency Response is 0.927, both of which are above the threshold of 0.7. This indicates that indicators in each construct have a high internal consistency so that they can be trusted in measuring the latent variables they represent. Thus, this model shows a strong reliability in explaining the factors that influence the optimization of horse troops in humanitarian missions and emergency response. In addition, the value of composite reliability (rho_a) and composite reliability (rho_c) for both constructs also show excellent results. On the Cavalry construct, the RHO_A value is 0.896 and the RHO_C is 0.919, while in the emergency response, the RHO_A value is 0.990 and the RHO_C is 0.964. These values are above 0.7, which confirms that the model has a very good consistency in measuring the latent variable. In other words, the instruments used in this study can be relied upon to measure the effectiveness of the cavalry troops and emergency responses to valid and consistent disasters. From the perspective of the Disaster Response Theory, high validity and reliability in the emergency response construct show that the rapid response to the disaster is very dependent on the factors that have been measured in this study. AVE of 0.930 on Emergency Response shows that the indicators are able to explain more than 90% of the variance of this construct. It supports the argument that effective coordination, response speed, and assistance are the main elements of an efficient disaster response strategy. In the context of adaptive logistics theory and public administration theory, high reliability in the Cavalry construct (Ave = 0.790) confirms that mobility, personnel readiness, and technology support and coordination are the main factors in building adaptive logistics systems in emergency situations. This shows that the use of horse troops can be a flexible and effective logistics solution in a field condition that is difficult to access by modern vehicles. In addition, from the point of view of public governance, a strong validity in this construct shows that policies and regulations that support the use of emergency troops in emergency response must continue to be strengthened to increase operational effectiveness on a broader scale[25].

Table 3. Discrimant Validity- Heterotrait Monotrait Ratio (HTMT)

Construct (latent variable)	CAVALARY	EMERGECNY RESPONSE
CAVALARY		
EMERGECNY RESPONSE	0.560	

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The results of the analysis of discriminant validity using the heterotrait-monotrait ratio (HTMT) showed that the HTMT value between the construct of Cavalry and Emergency Response was 0.560. This value is below the 0.85 threshold commonly used in SEM-PLS analysis, indicating that the two constructs have good discriminant validity. In other words, cavalry and emergency response do measure different concepts, so there is no multicollinearity or overlap problem between these two latent variables. This strengthens the assumption that the cavalry has a unique role in the logistics system and emergency response that is not entirely overlapping with a conventional disaster response system. In the perspective of the Disaster Response Theory and Adaptive Logistics Theory, a good discriminant validity shows that the mobility of the cavalry in supporting disaster response can stand as a separate logistics strategy but complement each other with the overall emergency response system[26]. With a relatively low HTMT, this emphasized that the use of horse-cadling troops in disaster responses has its own characteristics, such as accessibility to difficult areas, personnel readiness, and technological support that is different from the conventional emergency response approach. Therefore, in the context of public policy (Public Administration Theory), this result indicates that coordination between agencies must consider the unique role of the horsemen as an additional element in a more comprehensive national disaster response strategy[27].

Table 4. Fornell - Larcker Criterion

Construct (latent variable)	CAVALARY	EMERGECNY RESPONSE
CAVALARY	0.889	
EMERGECNY RESPONSE	-0.529	0.965

The results of the Fornell-Larcker Criterion analysis show that the square root of the Average Variance Extracted (AVE) for each construct is greater than the correlation between other constructs. The AVE root value for cavalry is 0.889, while for emergency response it is 0.965. Meanwhile, the correlation between the two constructs is -0.529. This indicates that each construct has a strong discriminant validity because it explains more variance indicators themselves compared to variances that are shared with other constructs. Thus, this result shows that Cavalry and Emergency Response are two different concepts in this study. In the context of the Disaster Response Theory, this result strengthens the argument that cavalry in the emergency response system has its own characteristics compared to conventional emergency response mechanisms. The negative correlation of -0.529 shows that the increase in the role of the horsemen does not always go in the same direction as the overall effectiveness of the emergency response system. This can be caused by the limitations of infrastructure and the readiness of the cavalry in dealing with major disasters that require modern technology. However, in certain situations, the cavalry troops still have advantages in mobility and accessibility to areas that are difficult to reach by conventional vehicles. From the perspective of adaptive logistics theory, this good discriminant validity shows that the logistics strategy based on a horse troop needs to be developed as a complementary solution, not replacing the main emergency response system. The difference in characteristics between cavalry and emergency response shows that both have a unique operational approach. Therefore, in the Public Administration Theory, coordination between cavalry troops and other disaster response systems becomes crucial to ensure effectiveness in disaster management. With this understanding, policies related to disaster response can be designed to be more adaptive, integrating various response methods in accordance with specific needs in the field[28].

Table 6. Direct Effect

Construct (latent variable)	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
CAVALARY -> EMERGECNY RESPONSE	-0.529	-0.555	0.134	3.932	0.000

The results of the direct effect analysis show that the relationship between cavalry and emergency response has a path coefficient of 0.529 with a T-statistics value of 3.932 and a P-value of 0.000. This value shows that the relationship between the two variables is statistically significant at a 99% confidence level, which means that cavalry has a strong influence on the effectiveness of emergency response. In other words, the involvement of emergency troops in emergency response operations made a real contribution to increasing the effectiveness of disaster responses, especially in situations that require high mobility and access to difficult areas. From the perspective of the Disaster Response Theory, this result shows that the cavalry can play an important role in an emergency response, especially in conditions where motorized vehicles have limited access. Disaster response requires flexibility and the ability to reach the affected areas quickly, and the horsemen can adapt to difficult terrain, such as mountainous areas, forests, or locations with damaged infrastructure. Thus, horsemen become one of the important alternatives in the emergency response system that aims to provide assistance quickly and effectively. From the point of view of the adaptive logistics theory, this result shows that the cavalry troops contribute to increasing logistics flexibility in disaster situations. Effective logistics systems must be able to adjust to changes in conditions on the ground, and horse troops offer alternative solutions in the distribution of assistance and mobilization of personnel. With the support of appropriate technology, such as modern communication systems and coordination with other emergency units, horsemen can be an integral part of adaptive and responsive logistics strategies to various challenges in the field. In the context of the Public Administration Theory, this result indicates the importance of better policies and coordination in optimizing the role of emergency troops in an emergency response. With appropriate policies, the horsemen can be used strategically in emergency response operations, especially in areas that are difficult to reach by motorized vehicles. In addition, coordination between agencies can be strengthened to ensure that the cavalry works synergistically with other rescue units, such as medical teams, SARs, and police. This shows that effective public administration is needed to optimize the use of available resources. Furthermore, the results of this study also show that the effectiveness of the emergency troops in the emergency response not only depends on their mobility but also on the readiness of personnel and technological support. Good

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training and coordination with other stakeholders are very important to ensure that the cavalry can carry out their duties optimally. Therefore, investment in increasing the capacity of horse troops, including training and technological use, is a key factor in increasing their role in humanitarian operations and emergency response. Overall, this research confirms that cavalcade forces have great potential in supporting the effectiveness of emergency responses. Although this approach needs to be adjusted to the specific conditions in the field, the integration of horse troops in an emergency response strategy can provide significant benefits in increasing accessibility, response speed, and operational efficiency in handling disasters and humanitarian crises. With better coordination and supporting policies, horsemen can be an important part of a more effective and sustainable emergency response strategy[30].

Table 8. f-square

Construct (latent variable)	CAVALARY	EMERGECNY RESPONSE
CAVALARY	**0.388**	

The F-Square value of 0.388 shows that the cavalry has a strong enough influence on the emergency response. In SEM-PLS analysis, the F-Square value is used to measure the size effect of an independent variable on the dependent variable. According to Cohen (1988), the F-Square value of 0.02 shows a small effect, 0.15 shows a moderate effect, and 0.35 shows a large effect. With a value of 0.388, it can be concluded that the contribution of cavalry to emergency response is in a large category, showing that the involvement of the cavalry troops significantly strengthens the effectiveness of emergency responses.In the context of the Disaster Response Theory, these results indicate that the cavalry played an important role in emergency response operations by increasing mobility and accessibility to affected areas. The superiority of the horsemen in reaching Medan is difficult to allow them to provide assistance faster than motorized vehicles in certain situations. Therefore, cavalry forces can be an important component in a flexible and adaptive emergency response system to various disaster conditions. From the perspective of adaptive logistics theory, this F-Square value also confirms that horsemen can increase the effectiveness of the logistics system in an emergency situation. Adaptive logistics systems must be able to adjust the assistance distribution strategy to dynamic field conditions. Thus, the use of horsemen can be an efficient solution in supporting logistics and evacuation of victims in the area with limited access. Therefore, this research highlights the importance of integrating the horsemen in an emergency response strategy to increase resilience and operational efficiency[31]

Importance-Performance maps in the picture show the relationship between importance and performance levels of the analyzed variables. In this model, variable X1 (mobility and accessibility), X2 (training and readiness of personnel), and X4 (technology and equipment support and coordination with stakeholders) have a negative value of interests, which shows that their contribution to the dependent variable may be weaker than other factors.. In the context of the Disaster Response Theory, this model confirms that the effectiveness of emergency response does not only depend on the mobility or readiness of personnel but also on how technology and coordination can improve the efficiency of overall responses. Therefore, although certain factors have a statistically smaller influence, strengthening performance can still provide benefits in increasing the operational effectiveness of the cavalry in emergency situations

Evaluation of the kindness of the model compatibility

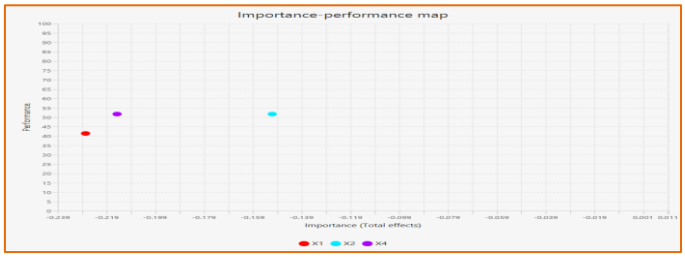

Figure 4. IPMA

From the perspective of adaptive logistics theory, this result also indicates that flexible logistics strategies require a balance between the interests and performance of various factors. In the implementation of emergency response policies, decision-makers need to adjust the allocation of resources to increase variables with high performance and consider optimizing variables with lower interests. Thus, this model can still be relied upon as a basis for increasing the effectiveness of emergency response with a more strategic and data-based approach.[33]

PLSpredict/CVPAT

Indicator (manifest variables)	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
Y3	0.264	0.255	0.132	0.277	0.132
Y4	0.091	0.274	0.139	0.306	0.155

The PLS Predict results in Table 9 indicate the Q^2predict value for indicators of Y3 of 0.264 and Y4 of 0.091. The positive Q^2predict value shows that the model has a good prediction ability for the dependent variable (emergency response). However, the difference in value between Y3 and Y4 shows that the model is better able to predict the speed of response and assistance (Y3) compared to operational efficiency and long-term impact (Y4). In the context of the disaster response theory, this indicates that rapid responses are more easily measured and predicted compared to long-term efficiency aspects, which are more complex and influenced by many external factors. In terms of evaluation of predictive errors, pls-sem_rmse and pls-sem_mae values compared to lm_rmse and lm_mae show that the PLS-SEM model produces smaller errors compared to the linear model approach (LM). For example, for the Y3 indicator, the PLS-SEM_RMSE value is 0.255, smaller than the lm_rmse of 0.277. This shows that the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach is superior in predicting the emergency response variable compared to the linear regression approach. If

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associated with adaptive logistics theory, differences in the prediction level between Y3 and Y4 show that adaptive logistics systems are more effective in increasing the speed and scope of response (Y3) than long-term efficiency (Y4). This is because logistics flexibility has a more direct impact on the speed of distribution of aid, while long-term efficiency requires more complex coordination between technology, human resources, and infrastructure. Therefore, in strengthening the cavalry troops as part of emergency response, there needs to be a special strategy to increase the predictability of long-term operational efficiency. In the perspective of the Public Administration Theory, this result also underlines the importance of good governance in coordination between agencies. The effectiveness of emergency response not only depends on the speed of response but also on long-term operational continuity. Therefore, policymakers must consider the factors that increase the predictive power of the efficiency and long-term impact through policies that support sustainable logistics infrastructure and training programs for emergency response personnel[34].

Table 10. CVPAT- PLS-SEM vs. Indicator average

Construct (latent variable)	PLS loss	IA loss	Average loss difference	t value	p value
EMERGECNY RESPONSE	0.070	0.085	-0.015	1.129	0.262
OVERALL	0.070	0.085	-0.015	1.129	0.262

Table 10 results show the ratio between PLS Loss and IA Loss in the Emergency Response model. The PLS loss value is 0.070 lower than the IAe IA loss of 0.085, which means the PLS-SEM approach has a smaller level of prediction error compared to the average indicator (indicator average/IA). The average error difference of -0.015 indicates that the PLS-SEM model is more accurate in predicting the emergency response variable compared to the simple approach based on the average indicator. This supports the validity of the model in measuring the relationship between the readiness of the cavalry andthe effectiveness of emergency responses. In terms of statistical significance, the T-valueof 1.129 and P-value of 0.262 show that the difference between the two methods is not significan. This means that although PLS-SEM has a better prediction level, its superiority compared to the average indicator method is not statistically strong enough. In the context of the Disaster Response Theory, this can indicate that other factors that are not included in the model also play a role in the effectiveness of emergency response. Therefore, an increase in model accuracy can be done by considering additional variables such as coordination between instances or other external factors. If it is associated with adaptive logistics theory, this result shows that the flexibility of logistics represented by the readiness of the cavalryry troops has a relationship with the effectiveness of emergency responses, but operational complexity can cause model predictions to still have limitations. Adaptive logistics in an emergency depend on many factors such as infrastructure readiness, supporting technology, and effective coordination, which may not be fully reflected in the model. Therefore, further research can develop the model by considering more logistical aspects that contribute to the effectiveness of the response. se. In the perspective of the Public Administration Theory, these results confirm that policy management in emergency responses requires an approachh that is more than just a statistical analysis. Although PLS-SEM shows excellence in predictions compared to the average indicator method, policymakersstill need to develop public policy-based strategies that consider structural factors, regulations, and readiness of human resources. Thus, the policy in strengthening the cavalry as part of emergency response must consider not only technical readinessbut also effective governance to ensure sustainability and optimization of responses in emergency situations[35].

IV. CONCLUSION

This study has examined the optimization of horse troops in the humanitarian mission and emergency response through the Mixed Methods Explanatory Sequential Design approach. Based on the results of NVIVO 12 and SEM-PLS 4 analysis, it was found that cavalcade forces have strategic potential in increasing the effectiveness of disaster responses, especially in remote areas and difficult to reach by conventional vehicles. This finding shows a close relationship between mobility, accessibility, coordination, and modernization of equipment and training in supporting the success of the horse riding for non-war operations. The results of the NVivo 12 analysis show that the main concepts in the optimization of horse troops include elements of mobility, speed, efficiency, cross-agency coordination, and technological integration in the emergency response system. Key words such as "troops," "cavalry," "TNI," "humanitarian," "disaster," and "response" become the main indicator that shows that the cavalry troops play an important role in humanitarian operations. In this context, the flexibility and adaptability of the cavalry allow them to reach the disaster-affected areas faster and provide more effective assistance than conventional methods. Meanwhile, the results of the SEM-PLS 4 analysis show that the relationship between the Cavalry and Emergency Response variables has a path coefficient of 0.529 with a T-Statistics value of 3.932 and a P-Value of 0.000. This value indicates that the relationship is significant at a 99% confidence level, which means that the existence of a cavalry troop has a significant impact on increasing the effectiveness of emergency responses. Thus, this research provides empirical evidence that horsemen can be an integral part of the national emergency response system, especially in situations that quire high mobility. From the theoretical perspective, this research is in line with the Disaster Response Theory, which emphasizes the importance of rapid and effective coordination in disaster responses. In addition, this study also supports adaptive logistics theory, which highlights the flexibility and mobility as a key element in the emergency logistics system. In the context of governance, the findings of this study strengthen the relevance of Public Administration Theory, which discusses the need for policies that support synergy between instances in optimizing the response to disasters. Compared to previous research, this research fills a significant gap in academic studies. Previous studies focused more on the role of cavalry in the military context and border security patrols, while aspects of humanity and emergency response have not been widely discussed. Thus, this study made a new contribution by exploring how the horsemen could function in humanitarian

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operations, especially in the geographical context of Indonesia, which is prone to disaster. The implications of this study are very broad, both in terms of policy and operations. In terms of policy, the results of this study encourage the need for formal recognition of the cavalry as a strategic element in the national emergency response system. In the operational aspect, this finding confirms the importance of increasing the capacity of riding troops through special training, modernization of equipment, and integration of communication and navigation technology to support the effectiveness of operations. Recommendations from this study include several important aspects. First, the government and the TNI need to develop special doctrines governing the role of horsemen in humanitarian missions. Second, investment is needed in training and equipment that allows the cavalry troops to operate more efficiently in various disaster scenarios. Third, coordination between various related institutions, including BNPB, TNI, and humanitarian organizations, needs to be improved to ensure synergy in emergency responses. However, this research has several limitations. First, the geographical scope of this research is still limited to certain regions in Indonesia, so the generalization of the results may be limited. Second, although statistical analysis shows a strong relationship between the cavalry and the effectiveness of emergency response, this research has not fully explored other factors that can affect results, such as infrastructure conditions and local community involvement. Therefore, future research is advised to expand the scope of the study area, as well as explore additional factors that can increase the effectiveness of the horsemen in humanitarian operations and emergency response. Overall, this research provides a new insight about the optimization of the horsemen in the humanitarian mission and emergency response. By integrating empirical findings from NVivo 12 and SEM-PLS 4 analysis, as well as referring to relevant theories, this study strengthens the argument that horsemen can be a strategic solution in increasing the effectiveness of disaster response. Therefore, further research is needed to continue to develop this concept and ensure optimal implementation in the national emergency response system.

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