# THE EFFECT OF MODERNIZATION OF MAIN EQUIPMENT OF BEKANG BATTALION DEFENSE SYSTEM ON THE PREPARATION OF LOGISTIC SUPPORT FOR INDONESIAN ARMY

Boby Wijayanto[1], Nanang Eko Ismurdianto[2], Andyka Kusuma[3]

Seskoal and Universitas Indonesia
(boby_wijayanto57@tnial.mil.id, nanang_eko@gmail.com, andyka.k@eng.ui.ac.id)

**Abstract –** The Unitary State of the Republic of Indonesia is one of the countries with a strategic path to world trade, and this has become a favorable supporting factor in various sectors in Indonesia. The territory of the Unitary Republic of Indonesia, which is also very broad, has implications for national defense that is complex and very open so that it is easily entered by anyone from various directions. The territory of the Republic of Indonesia consists of 7.7 million km2, stretching from Sabang to Merauke, from P. Miangas to P. Rote consisting of 17,504 islands united by vast seas and oceans. The problem that arises now is where the Army defense equipment especially in the Bekang Battalion is old and ineffective in supporting logistical activities. However, technically, the modernization of the Army defense equipment prior to comprehensive considerations, mainly based on the effectiveness of activities that can support the main tasks and the use of defense equipment in an effective and efficient operation, besides that in terms of modernizing military equipment and weapons in addition to supporting logistical activities, they must also be able to be tested in Combat Proven. In fulfilling modern defense equipment, it is highly expected to support the main tasks of the Army, especially support for defense equipment in the Bekang Battalion, the fulfillment of modern logistical transport vessels. This study analyzes the effect of modernization of the Bekang Battalion defense system on the readiness of the Army logistical support with a research sample in the Bekang Battalion Unit of the Army with data analysis using the SPSS (Statistical Package for Social Sciences) method to obtain an objective assessment of the effect of the readiness of the support units of the data analysis on the basic tasks of the Army. With the modernization of defense equipment, it is hoped that Battalion's readiness can be maximized in carrying out its duties in the future.

**Keywords:** defense equipment, modernization, logistics, SPSS (Statistical Package for Social Science)

## Introduction

In anticipating the development of information technology advances and weapons capabilities and other supporting facilities, the Army is conducting a study of the defense equipment capabilities that must be owned by units in the ranks of the Army in the hope that they will be able to face challenges or threats in the future. Main

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[1]  Seskoal Cohort 57.
[2]  Besmar National Strategic Study Program and Applied Maritime Operation Study Program of the Seskoal.
[3]  Faculty of Engineering of Universitas Indonesia and Applied Maritime Operation Study Program of the Seskoal.

equipment and weaponry system (*alutsista*) has a huge impact on the position of a country in the global political arena and modernization of defense equipment is seen as being very urgent because the increased intensity and escalation of threats resulting from the development of strategic environment demands professionalism of the Army in carrying out its duties and obligations. One of the methods to be able to improve professionalism is by carrying out modernization of defense equipment.[4] The implementation of modernization of defense equipment in the Bekang Battalion is very important considering the urgent logistical needs in the operation that must be carried out quickly and on target. Therefore, the object chosen by the authors is the logistics transport ship owned by the Bekang Battalion of the Army (TNI-AD).

In accordance with the article 8 of the Republic of Indonesia Law No. 34 of 2004, the main duty of TNI-AD is in building and developing land dimension power. In this case, there are units in the Bekang ranks that are in charge of the defense equipment, which is very instrumental in carrying out the tasks of the Army, namely the Bekang Battalion. This unit was formed in December 2003, and has the task of organizing and carrying out logistical transport activities in order to support the main tasks of the TNI.

With a very broad logistical support route, it is hoped that the Bekang Battalion could carry out the task well. This can be seen from existing support. Logistics activities to support the training activities of TNI-AD has been performed, among others, logistics provision for TNI joint firing assistance drill and logistics provision for TNI PPRC Training on Natuna Island. In this case, the involvement of the Bekang Battalion was very important for the implementation of logistical support activities according to the instructions of the TNI Commander. This is what motivates the authors to turn it into an object of study. This study is an input to be considered by TNI leadership in determining defense equipment modernization in order to support the logistical activities of TNI-AD for the sake of supporting their main tasks, namely to ascertain the extent to which defense equipment modernization has an effect on

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4    Brigjen TNI D. Doetoyo. ''Tentang Modernisasi Alutsista TNI AD'', *Jurnal Yudhagama,* No. 2, Vol. 36, Edisi June, 2016, p.28.

Bekang Battalion toward the TNI-AD logistical support.

**Literature Review**

**Study on the Modernization of Alutsista Variables and readiness of logistical support.**

In this study, the authors analyzed the importance of modernization of defense equipment that is carried out in the Army Bekang Battalion because it is expected that this study can provide a rationale in carrying out the modernization for the higher-up. This is in accordance with these following supporting theories:

a. Based on the theory of modernization.

   According to Soerjono Soekanto, modernization is a form of directed social change based on a plan, i.e. the adjustment and balancing of technology to match the advancement of science and technology in the manned and nurturing personnel towards the improvement of the latest Army Defense Equipment to be able to face various task challenges.[5] It is hoped that the Bekang Battalion, in accordance with modernization theory, will carry out targeted social changes by fulfilling the number of personnel in

accordance with the TOP/DSPP and increasing the number of transport materials to support the main tasks of the Army.

b. Based on logistics management theory. According to Donald J Bowersox in his book about logistics management, logistics management is one of the oldest, but also the youngest company activities. Logistics activities (facility location, transportation, inventory, communication, and management and storage) have been carried out since the beginning of commercial specialization.[6] This study is closely related to this theory, i.e. that the modernization of defense equipment should be carried out in support of the main tasks of the unit in order to improve the effectiveness well as efficiencies for the readiness of TNI-AD logistical support. This logistics system describes the environment in the Bekang Battalion where logistics activities must be planned and carried out. This is coupled with the ability of qualified personnel in manning the defense equipment.

c. Based on logistical theory.

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[5] Soerjono Soekanto, *Sosiologi: Suatu Pengantar*. (Jakarta: 1987), p. 124.

[6] Donald, J. Bawersox, *Manajemen Logistik*, (Jakarta: PT Bumi Aksara, 1978), p. 88.

Henry E. Eccles explains the relationship between Strategy-Logistics-Tactics. Strategy and Tactics are the means or methods used by leaders (generally military leaders) to achieve the objectives of a military activity which is to win the war. For this purpose, in addition to strategy and tactics, one thing that is dominant and that greatly supports the achievement of victory is adequate logistical support for the personnel and combat equipment.[7] In the organization at Bekang Battalion, the application of this theory is very relevant and useful, with the modernization of defense equipment expected by Battalion 4/Air personnel. In every activity that starts from planning, strategy, tactics and logistics cannot be separated. Therefore, in every action in the Bekang Battalion, decision making is expected to always be based on these conditions in the future.

**State of the Art**

a. Angga Nurdin Rachmat, 2016. Journal. "*Challenges and Opportunity of Global Defense Technology Development for Developing Indonesia's Defense Power*". General Ahmad Yani University. Bandung. Faced with the influence of modernization in the Bekang Battalion in accordance with the level of authority in the deployment of defense equipment in the Bekang Battalion by the Army Headquarters, the modernization of defense equipment is expected to be realized soon so that the intensity of the Army training can be more numerous and soldiers are more professional in fulfilling the Minimum Essential Force (MEF).[8]

b. Dollygrareo Stelix Vikoyusufo, 2017. "*The Impact of Defense Equipment Procurement in Indonesia's Defense with regard to Legal Politics in indonesia*". Padjadjaran University. Bandung. In this case, the strategic plan and Minimum Essential Force become a reference for the TNI, including the Army, in the arrangement of ground dimension power for the sake of dealing with future threat. The Bekang Battalion has a condition of unit stability that is still far from the Minimum Essential Force, but the Bekang Battalion is expected to

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7   Henry E Eccles, Logistic in The National Defence, (Harrisburg, Pennsylvania: The Military Service Publishing Company, 1959).

8   Angga Nurdin Rahmat,"Tantangan dan Peluang Perkembangan Teknologi Pertahanan Global Bagi Pembangunan Kekuatan Pertahanan Indonesia", *Jurnal Ilmu Hubungan Internasional,* Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Jenderal Ahmad Yani, Bandung, 2016.
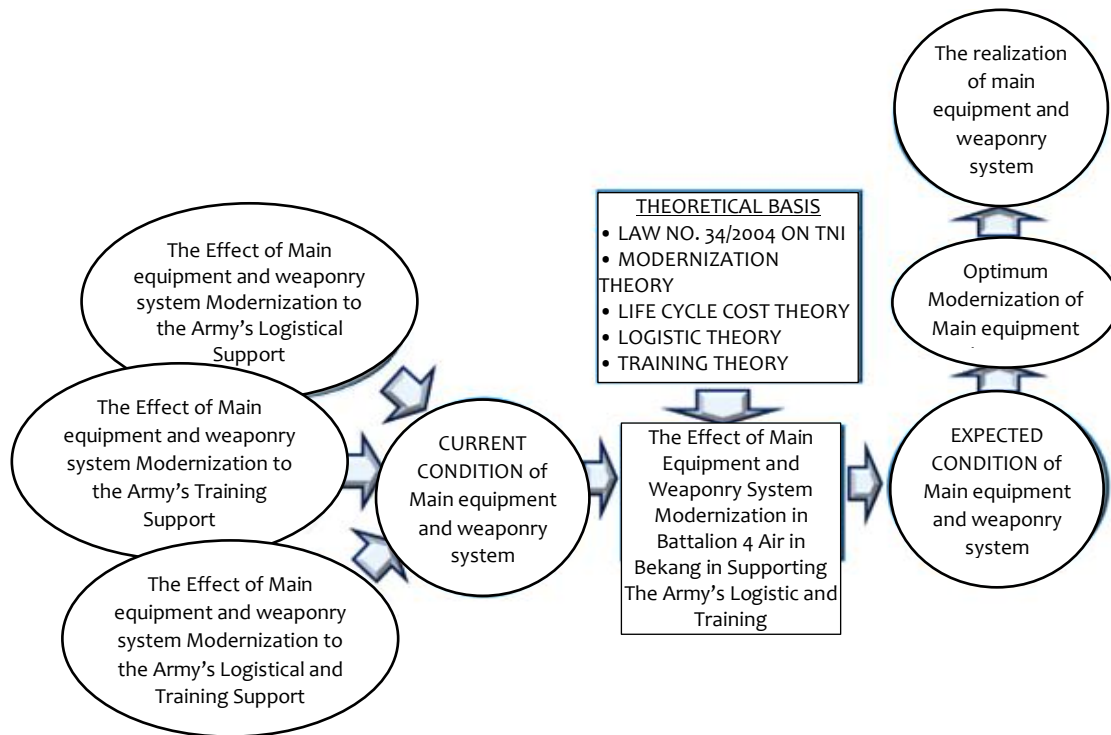
**Figure 1.** Theoretical Framework
*Source:* Processed Authors, 2019

have increased mobility capability in the context of Military Operations for War as well as Military Operations Other than War in the entire territory of the Republic of Indonesia. Furthermore, the Battalion Bekang is expected to have an increase in the capability of combat units, especially the Central Level Strike Force, as well as the territorial unit.[9]

**Theoretical Framework**

The authors' theoretical framework is displayed in the Figure 1.

**Research methods**

This study employs statistical calculations using the IBM Statistical Package for Social Sciences (SPSS) Version 25 software to find out the extent to which the modernization of defense equipment influences the Bekang Battalion. The data and results of the research in the units of the Army that have been obtained were then tabulated into a table that can support and describe the value and amount of respondent data. This data tabulation was made in order to facilitate

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[9] Dollygrareo Stelix Vikoyusufo, "Dampak Pengadaan Alutsista Dalam Pertahanan di Indonesia Dikaitkan Dengan Politik Hukum di

Indonesia", Tesis Kuliah Politik Hukum, Fakultas Hukum Program Studi Magister Kenotariatan, Universitas Padjadjaran Bandung, 2017.

statistical calculations. Furthermore, the obtained calculation results were analyzed into the results of the research discussion. Testing research instruments is very important in conducting research, because with these tests we can get the expected results and it can serve as a hypothesis before continuing research. The authors employ analysis activities, including multivariate analysis using validity tests, reliability test, normality test and heteroscedasticity test, and carry out descriptive analysis, multiple linear regression analysis, and correlation analysis. In this research, the authors carried out research activities in the Bekang Battalion unit and other supporting units in order to collect the data. This was implemented in May 2019 and was fully supported by the Indonesian Navy Staff and Command School (Seskoal).

**Results and Discussion**

**Research Results**

This research was conducted in accordance with the analysis by using the SPSS of Windows 25. The research activity was carried out in accordance with the time allocation provided by the Navy Staff and Command School. The completion of the research questionnaire was carried out at the Bekang Battalion after the unit has finished carrying out their joint briefing. Respondents were asked to fill out a questionnaire that had been prepared by the authors by checking on the answers in the column that the respondent considers are in accordance with what has been experienced and what happened in the unit. The questionnaire includes 35 items of question and it managed to gather 96 respondents. The data obtained by the authors were then inputted into a sample of the images submitted as a result of the research implementation. So that in its activities, the Bekang Battalion is expected to be able to carry out tasks in order to support the implementation of the main tasks of units in the ranks of the Army. This includes: (1) the capability of supporting training activities at the Infantry Battalion level and material equipment; (2) supporting the operation at swamps, sea, river and beach for the combat units within the ranks of the Army; (3) transferring personnel and equipment through sea crossing using logistical transport vessels; (4) transferring supplies and material through the sea by using logistical transports; (5) carrying out level "0" up to level "II" maintenance and reparation of Army Ships according to the

vessel specifications; and (6) distributing logistics between Kotama Armies from the western, central to eastern regions. These must be carried out in accordance with the directive of the higher unit in order to support the unit's preparedness and support the main tasks. The data presented in this study is obtained from questionnaires and limited observation to the personnel of Bekang Batallion.

Out study on the modernization of defense equipment shows the urgency of carrying out modernization for the sake of smooth implementation of the main tasks, especially the readiness of logistical support of the Army. This study indicates that, going forward, the increasing need an complexity of supplies and material support will affect the velocity and accuracy in carrying out support toward the units of the Indonesian Army.

**Research Discussion**

The authors were collecting primary data since it provides direct answer.[10] The data that we collect were the result of the research conducted in the Bekang Batallion Unit and its supporting unit for logistic support, i.e. logistics transportation vessel amounting to 12

vessels whose specification is expected to be able to provide optimal support for the main duties in the future. This valid and reliable research instrument are absolute requirements to obtain an academic answer about a research concerning "The Effect of Defense Equipment Modernization in Bekang Battalion toward the Readiness of Indonesian Army Logistical Support." In testing the research instrument, this paper employs Validity Test and Reliability Test. The following is a copy of the data collected through questionnaire, in the form of the answer to each item of question that has been answered objectively by respondents.

Data analysis is a process to systematically find out and arrange data obtained through interview, field observation and other materials so it can be easily understood and the findings can be informed to others.[11] Data processing and research instrument testing are very important in conducting research, because it allows the authors to obtain the expected result that can be used as a hypothesis in continuing the research. Valid and reliable research instrument are

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[10] Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif dan R&D,* (Bandung: Alfabeta, 2010), p.89.

[11] Sugiono, *op.cit,* p. 55.

absolute requirements to obtain an academic answer.

**Multivariate Analysis** is a method of processing a large number of variables, whose purpose is to find the effect of those variables to an object simultaneously, as well as hypothesis on the interrelatedness between those variables.[12]

a. Validity Test

The fact that the research instrument in this paper has a positive and high correlation with the criteria (total scoring) indicates that the items have high validity as well. The minimum requirement is if r = 0.202 with a frequency distribution of n=96 at 5%. The validity of this research questionnaire can be ascertained using validity construct technique. The requirements used in the validity test is if $r_{calculation} \geq r_{critical}$, then the question in that research instrument is valid. $r_{critical}$ is the amount of frequency distribution with an error rate of 5% and n=96, i.e.: 0.202. The following is the result of validity test against research instrument by using the IBM SPSS Statistic Version 25.

Based on the result of the above testing to all item of questions toward research variables, we can find that the total of $r_{calculation} \geq r_{critical}$ for significance is 0.05, hence it can be argued that all 35 items of question are valid with the $r_{calculation} \geq r_{critical}$,

b. Reliability Test

In this case, in order to find out whether the research instrument is reliable as research instrument, the authors conducted reliability test by means of internal consistency using the split half technique as prescribed by the Spearman Brown formula.

$$r_i = \frac{2r_b}{1 + r_b}$$

Note:

n = internal reliability of all instruments

rb = correlation between the first and second half

Table 3 shown the result of reliability test by using split half technique analyzed using the Spearman Brown formula through SPSS Windows Version 25.

Based on the calculation of statistics reliability table, we find that the correlation between forms of the two groups of instruments is 0.683.

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[12] Anwar Hidayat, "Penjelasan Tentang Analisis Multivariat dan Jenisnya", in https://www.statistikian.com/2016/11/analisis-multivariat.html, accessed on 20 June 2019.

**Table 1.** Questionnaire Tabulation Data

| No | Name | Rank | Sex | Age | General Education | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Putut Siswanto | Major | Male | 52 | SMU | 6 | 5 | 6 | 6 | 6 | 5 | 6 | 2 | 5 | 5 | 5 | 4 | 5 | 6 | 6 | 5 | 5 | 5 | 6 | 5 | 6 | 6 | 5 | 6 | 6 | 5 | 4 | 5 | 5 | 5 | 6 | 2 | 5 | 5 | 5 | |
| 2 | Suyanto | Major | Male | 56 | SMU | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| 3 | Andi Hidayat | Major | Male | 39 | S-2 | 5 | 3 | 5 | 5 | 4 | 6 | 5 | 3 | 3 | 3 | 6 | 3 | 5 | 6 | 6 | 5 | 6 | 5 | 6 | 4 | 5 | 5 | 6 | 4 | 6 | 5 | 5 | 5 | 2 | 5 | 5 | 6 | 6 | 4 | | |
| 4 | Erwin Delanova | Major | Male | 41 | SMU | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 3 | 4 | 4 | 5 | 4 | 4 | 6 | 6 | 6 | 5 | 5 | 6 | 5 | 5 | 5 | 6 | 5 | 5 | 5 | 6 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | |
| 5 | Maolana Yoga | Major | Male | 36 | D-3 | 4 | 2 | 5 | 4 | 4 | 5 | 5 | 2 | 3 | 3 | 4 | 5 | 3 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | | |
| 6 | Dongos K | Major | Male | 48 | S-1 | 6 | 5 | 5 | 5 | 6 | 6 | 6 | 2 | 6 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 5 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 5 | 5 | 5 | 6 | 5 | | | | |
| 7 | Asep Tatang | Major | Male | 47 | S-1 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | |
| 8 | Ade Wawan | Major | Male | 50 | SMU | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| 9 | Darmayanti | Major | Female | 44 | S-1 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 5 | 5 | 5 | 6 | 6 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | | |
| 10 | Bambang Sakri | Captain | Male | 36 | S-2 | 6 | 5 | 5 | 5 | 6 | 5 | 5 | 3 | 5 | 3 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | | | |
| . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 60 | Riki Kevin | Prada | Male | 21 | SMU | 4 | 4 | 4 | 4 | 5 | 3 | 3 | 5 | 4 | 3 | 4 | 3 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 3 | 4 | 4 | 5 | 4 | 3 | 4 | 5 | | |
| . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 96 | Agus Waluyo | Praka | Male | 33 | SMU | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 6 | 4 | 5 | 6 | 5 | 4 | 5 | 5 | 5 | 6 | 4 | 5 | 4 | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | | | | |

*Source:* Processed by Authors, 2019

**Table 2.** Validity Test of Research

| No | Question Item | $r_{calculation}$ | $r_{critical}$ | Remarks |
|---|---|---|---|---|
| 1 | Item 1 | 0,608 | 0,202 | Valid |
| 2 | Item 2 | 0,482 | 0,202 | Valid |
| 3 | Item 3 | 0,588 | 0,202 | Valid |
| 4 | Item 4 | 0,463 | 0,202 | Valid |
| - | - | - | - | - |
| 32 | Item 32 | 0,466 | 0,202 | Valid |
| 33 | Item 33 | 0,465 | 0,202 | Valid |
| 34 | Item 23 | 0,483 | 0,202 | Valid |
| 35 | Item 35 | 0,260 | 0,202 | Valid |

*Source:* Processed by Authors, 2019

**Table 3.** Reliability Test Statistics Scale

| | | | |
|---|---|---|---|
| Cronbach's Alpha | Part 1 | Value | .803 |
| | | N of Items | 18a |
| | Part 2 | Value | .831 |
| | | N of Items | 17b |
| | Total N of Items | | 35 |
| Correlation Between Forms | | | **.683** |
| Spearman-Brown Coefficient | Equal Length | | .811 |
| | Unequal Length | | .812 |
| Guttman Split-Half Coefficient | | | .807 |

a. The instruments are: X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, X17, X18.

b. The instruments are: Y19, Y 20, Y 21, Y22, Y23, Y24, Y 25, Y26, Y27, Y28, Y29, Y30, Y31, Y32, Y33, Y34, Y35.

*Source:* Processed by Authors, 2019

Based on the correlation coefficient criteria (r) in relation with the determination of reliability level. The result is consulted with the above criteria and we found that the reliability of the instrument is at 0.50 – 0.89 or medium reliability.

c. Normality Test

Normality test aims to find out whether there is an interrupting or residual variable in the regression model that has normal distribution. We can see it from the probability plot normal that compares cumulative distribution with normal distribution.

**Table 4.** Result of Normality Test

| | | Unstandardized Residual |
|---|---|---|
| N | | 96 |
| Normal Parameters[a,b] | Mean | 0E-7 |
| | Std. Deviation | 3.19423652 |
| Most Extreme Differences | Absolute | .086 |
| | Positive | .086 |
| | Negative | -.044 |
| Kolmogorov-Smirnov Z | | .842 |
| Asymp. Sig. (2-tailed) | | .477 |

*Source:* Processed by Authors, 2019
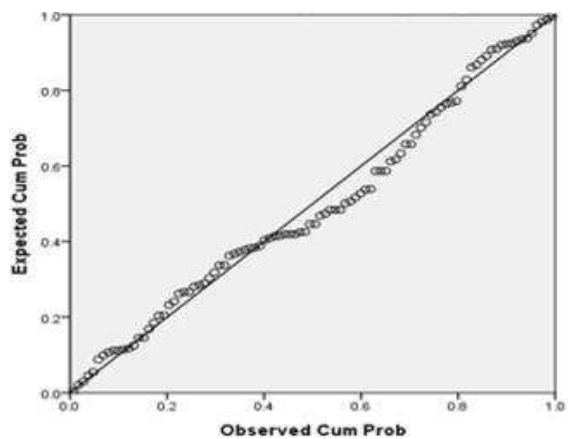


**Figure 2.** Scatter Plot Test
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Logistical Support Readiness
*Source:* Processed by Authors, 2019

Based on the above table, we can see that the significance value of defense equipment modernization variable (X) toward Logistical Support Readiness Variable (Y) is 0.477. Since the significance value is > 0.05, then the residual value is distributed normally. The result is strengthened by the result of scatter plot normality test as can be seen in Figure 2.

The result of scatter plot test shows the dash-line follows the diagonal line which means the relation between variables is strong and linear. The linear relationship shows a positive direction because, as seen in the chart, it increases to positive number. Due to the positive relationship, we can conclude that the increase of X-variable (defense equipment modernization) will also increase the Y-variable (logistical support readiness).

### 4. Heteroscedasticity Test

This test aims to find out whether there is an unequal regression variance of residual variable from one observation to another. If the variance from another observation is fixed, it is referred to as homoscedasticity — otherwise, it is referred to as heteroscedasticity. A good model of regression is homoscedasticity or the lack of heteroscedasticity. A way to detect it is by looking at the scatter plot chart between the bounded variable prediction (ZPRED) and residual (SRESID).[13]

The above table shows that the coefficient standard value of the logistical support readiness variable is bigger than the significance value of 0.05. Thus, logistical

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[13] Imam Ghozali, Aplikasi *Analisis Multivariate SPSS 25*, (Semarang: Badan Penerbit Universitas Diponegoro, 2006), p. 115.

**Table 5.** Result of Heteroscedasticity Test

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 14.550 | 3.382 | | 4.302 | .000 |
| main equipment and weaponry system modernization | .347 | .038 | .682 | 9.040 | .000 |
| Dependent Variable: Logistical support readiness | | | | | |

*Source:* Processed by Authors, 2019
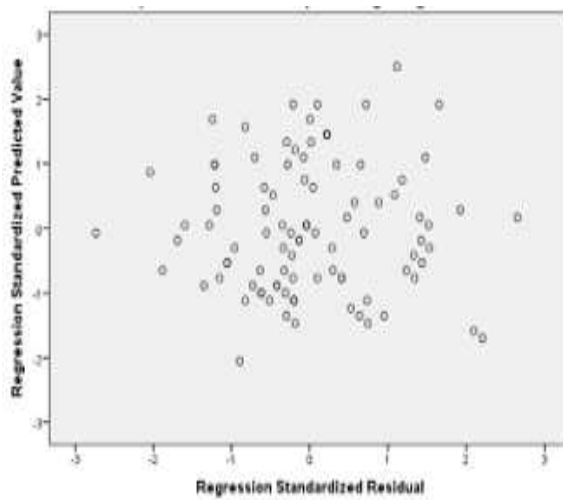


**Figure 3.** Scatter Plot Test
*Source:* Processed by Authors, 2019

support readiness is affected by defense equipment modernization.

The result of heteroscedasticity test to the logistical support readiness variable shows no particular pattern because there is no spread of irregular dots above and below the 0-axis at Y-axis. Therefore, there is no symptom of heteroscedasticity.

**Descriptive Analysis**

This section will discuss about the spread of respondents' answers to the whole measured concept. Based on that spread, we can find a tendency from all answers. In order to obtain the tendency of respondents' answers to each variable, it will be based on the mean score (index) categorized into range of score based on the three-box method calculation.[14]

**Table 6.** Three Box Method Scoring Category

| Score Range | Category |
|---|---|
| 20.00 = 46.67 | Low |
| 46.68 – 73.35 | Medium |
| 73.36 – 100 | High |

*Source:* Ferdinand Augusty, 2006

There are two variables that will be discussed in this study, namely defense equipment modernization (X) and logistical support readiness (Y). Thus, the authors shall describe in the table, the answers of the questionnaire from the 96 respondents in Bekang Battalion:

a. With regard to the defense equipment modernization variable (X), 41 respondents agree that defense equipment maintenance at Bekang Batallion has been well-implemented. This statement is strengthened by the responses from 31 respondents who quite agree with the fact that the maintenance of the 1983 or younger Coaster Ship has been well-implemented and 49

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[14] Ferdinand Augusty, *Metode Penelitian Manajemen*, (Semarang: Undip, 2006), p. 76.

respondents agree that the maintenance of the 1,000 ton plus LCU Ship has been well-implemented. A well and modern maintenance of defense equipment needs to be supported by the availability of quality spare parts. This is supported by 40 respondents who agree that the availability of spare parts for the maintenance of defense equipment in Bekang Batallion has been going well. 45 other respondents also agree that the logistical support and training has been improved with a modern defense equipment. The score for defense equipment modernization variable (X) is 72.8%. Based on the three-box method, the then defense equipment modernization variable is in medium category at the score range of 46.68% - 73.35%.

b. For logistical support readiness (Y), 43 respondents quite agree with the idea that Bekang Battalion has conducted logistical support in a timely manner. Meanwhile, the timeliness indicator for logistical support is scored at 74.7% or high category with a score range of 73.36% - 100%. As much as 59 respondents agree to the idea that Bekang Battalion has conducted preparation, planning and implementation of logistical support for the Army. This indicator is scored at 77.8% or high category with a score range of 73.36% - 100%. The total score for logistical support readiness (Y) is 74.5% or high category with a score range of 73.36% - 100%.

**Simple Linear Regression Analysis**

Simple linear regression is based on functional or causal relationship between independent variable and dependent variable. This is illustrated in the following table:

**Table 7.** Simple Linear Regression for Logistical Support Readiness

**Coefficients$^a$**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 14.550 | 3.382 | | 4.302 | .000 |
| modernisasi alutsista | .347 | .038 | .682 | 9.040 | .000 |

*Source:* Processed by Authors, 2019

In table 7, the consistency value for logistical support readiness is 14.550 with a regression coefficient of 0.347. This indicates that each 1% addition of logistical support readiness variable will result in 0.347 addition. This means that the effect of X-variable to Y-variable is positive. In other words, the modernization of defense equipment will result in an increased logistical support readiness.

**Correlation Analysis**

Hypothesis test is conducted using Pearson Product Moment correlation technique. This is useful for testing associative hypothesis if the data is in the form of interval. To support the accuracy of calculation, Pearson Product Moment calculation is calculated using IBM SPSS Statistic Version 25 software.

In the table 8, we can see that the Pearson Correlation between defense equipment modernization (X) and logistical support readiness (Y) is 0.682 or can be considered strong, positive correlation. The amount of percentage for the effect of defense equipment modernization variable (X) toward logistical support readiness variable (Y) in Bekang Battalion can be made using the formula: $KD = r^2 \times 100\%$. The result is the effect of defense equipment modernization (X) toward logistical support readiness (Y1) $KD = (0.682)^2 \times 100\% = 46.51\%$.

**Hypothesis Test**

The result of hypothesis test is a set of inseparable process in quantitative research method. Hypothesis is conducted using statistical analysis technique that has been determined previously, such as regression correlation, both simple and double. Each hypothesis is tested in individual subsection. The end result of statistical analysis is whether or not the hypothesis zero (Ho) is valid. The end result of statistical calculation is reported in the writing, whereas the complete calculation is attached in the annex. Finally, the authors made an interpretation on the end result of hypothesis test. Although the result of statistical analysis itself is already a statistic, it will not be adequate without an interpretation in connection to the formulated problem.

*Ho: ρ = 0,* there is no significant effect from defense equipment modernization to logistical

**Table 8.** Pearson Product Correlation Testing

| | | Main equipment and weaponry system modernization | Logistical Support Readiness | Training Support Readiness |
|---|---|---|---|---|
| Main equipment and weaponry system modernization | Pearson Correlation | 1 | .682** | .537** |
| | Sig. (2-tailed) | | .000 | .000 |
| | N | 96 | 96 | 96 |
| Logistical Support Readiness | Pearson Correlation | .682** | 1 | .669** |
| | Sig. (2-tailed) | .000 | | .000 |
| | N | 96 | 96 | 96 |

*Source:* Processed by Authors, 2019

support readiness.

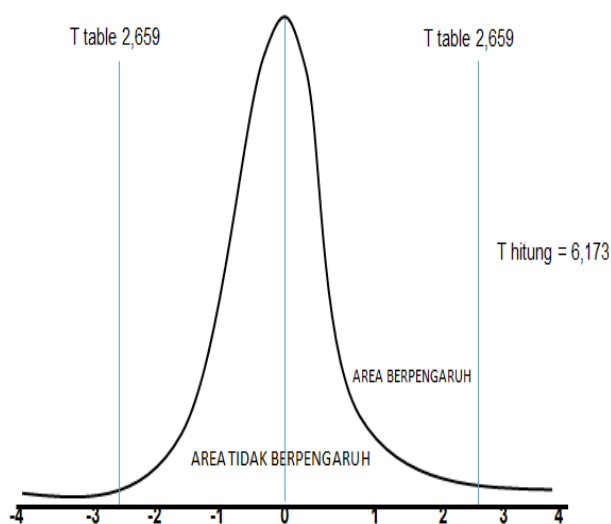*Ha: ρ ≠ 0,* there is significant effect from defense equipment modernization to logistical support readiness.

*Ho: ρ ≠ 0,* there is significant effect from defense equipment modern-ization to logistical support readiness.

This means that defense equipment modernization will really affect the logistical support readiness of Indonesian Army.

t table 0.025: 94 = 2.659

t calculation = 6.173



*Source:* Processed by Authors, 2019

The above Hypothesis Test shows that t table value 0.025:94 = 2.659 and t calculation = 6.173, hence it is proven that there is significant effect from defense equipment modernization to logistical readiness support. Thus, Ho is rejected and Ha is accepted.

## Conclusion

### Data Analysis Result

Based on existing data, the authors conclude that the writing of this paper has positive correlation with the criteria (total score) and high correlation. It also shows that the item has high validity. The minimum requirement to meet is if r = 0.202 with frequency distribution of n=96 at 5%. To determine the validity of the questionnaire in this research, we employed construct validity technique. The provisions employed in validity test is if $r_{calculation} \geq r_{critical}$, hence the statement of the research instrument is valid. $R_{critical}$ is the amount of frequency distribution with an error rate of 5% and n=96, i.e.: 0.202. The correlation analysis shows that Pearson Correlation for defense equipment modernization (X) toward logistical support readiness (Y) is 0.682 or can be considered as strong, positive correlation. The amount of percentage for the effect of defense equipment modernization variable (X) toward logistical support readiness (Y) in Bekang Battalion can be made using the formula: KD = $r^2$ x 100%. Thus, the calculation is Defense Equipment Modernization

Variable (X) toward Logistical Support Readiness (Y1) KD = $(0.682)^2$ x 100% = 46.51%.

Based on theoretical recommendation, this study proves that that the effect of defense equipment modernization toward the logistical support readiness of the Indonesian Army can be well-implemented by using IBM SPSS Statistic Version 25 method. The independent variables in this research have positive and significant effect in various testing methods employed by the authors. Therefore, a 1% addition to the value of defense equipment modernization variable will result in 0.347 increase. Thus, in theory, our recommendation to the Bekang Battalion unit is as follows:

a. Adding the quantity and quality of existing defense equipment so they can always be ready to provide logistical support for the Army.

b. In accordance with the existing defense equipment in Bekang Battalion, items with more than 30 years of life time should be granted to Kotama TNI AD, especially those with archipelagic area as means of transportation to support the main duties of the Army.

Practically speaking, there are some problems that should be taken note:

a. The result of the research shows that defense equipment modernization variable has positive effect to the logistical support variable, hence it can support the operational aspect of the Army near the border. The activities to be implemented should be effective and efficient in supporting the main duties of the Indonesian Army.

b. The result of the research shows that defense equipment modernization has significant effect to the logistical support readiness of the Indonesian Army. The result of this research can be used as an input for the Higher-Up Command in Indonesian Army Headquarter and Implementing Body of Bekang and, most importantly, the improvement of the unit in Indonesian Army.

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