

The Influence of Artificial Intelligence (AI) on General Administration in the Indonesian Army

Umi Putri Nur Baiti¹, & Budi Setiawan²

¹Mahasiswa Program Studi Administrasi Negara, Fakultas Ilmu Hukum, Ilmu Sosial dan Ilmu Politik, Universitas Terbuka.

²STIA & Pemerintahan Annisa Dwi Salfarizi, Indonesia

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Abstract

This research aims to examine the influence of Artificial Intelligence (AI) on the TNI-AD in the field of general administration. The method used is a quantitative approach with an explanatory research design. The research sample involved various groups within the TNI-AD throughout the Republic of Indonesia, with data collected through questionnaires distributed to 100 respondents and analyzed using descriptive statistics. The research results show that the majority of respondents believe that AI can improve the efficiency and effectiveness of administrative processes, data accuracy, reduce workload, and the quality of decision making. The research results also showed that an average of 70% of respondents stated that AI has a significant influence on administration in TNI-AD institutions through the variables of respondents' perception, confidence, and acceptance to the application of AI.

Keywords: General Administration, Artificial Intelligence (AI), Indonesian Army, Teknologi, Influence

1. Introduction

Optimizing administration has become a primary goal for many organizations and institutions. This effort aims to increase efficiency, productivity and accuracy in various administrative processes. In an effort to achieve this goal, Covarrubias-Moreno (2021) states that the implementation of Artificial Intelligence (henceforth AI) has become an attractive option in human life. AI has become an important catalyst in the transformation of public administration. AI technology gives computers the ability to learn, adapt, and perform tasks that previously could only be performed by humans. In an administrative context, implementing AI can help increasing productivity and decision quality, reducing operational costs, and increasing customer satisfaction levels. Besides, AI can also be used in data processing and analysis. In administration, the volume of data generated is very large and complex. By using AI technology such as machine learning and predictive analysis, this data can be quickly processed and analyzed to provide valuable insights. This allows for better decision making and more effective strategies.

The increasingly intensive use of AI technology in the military world in recent years cannot be separated from not only the need for intelligent systems that can ease human work but also the need to process large amounts of data and information quickly (Sumari, 2020). To address these challenges, ethical AI governance aims to minimize AI risks and support the use of technology

for the common good and sustainability (Ireni-Saban & Sherman, 2021). Moreover, AI can also be used to automate routine and repetitive tasks in administration, such as document archiving, inventory management, or scheduling works. AI can help in collecting data or providing suggestions (Saura & Debasa, 2022). AI and the Future of the Public Sector examines key issues in the management of public administration, including the treatment of administrative use in the financial sector (Boobier, 2022). By reducing the time-consuming administrative workload, AI allows staff to focus on the tasks they need.

Research by Criado and Zarate-Alcarazo (2022) who highlights the importance of the technological framework and the role of Chief Information Officers (CIOs) in integrating AI in Spanish local government, shows how AI can influence strategic outlooks and decisions in public administration. This research underscores the potential of AI to change the cognitive framework of leaders and decision makers in public administration. Ustinovich (2021) explores the benefits of AI in public administration and business, emphasizing how AI can provide benefits to society and social policy. This shows that AI not only has operational impacts but also has broad social implications, which can strengthen public policies and improve societal welfare. In the context of administrative decisions, Fejes and Futó (2021) identified that AI supports decision-making in public administration, providing insights that can improve the efficiency and effectiveness of decision-making processes. This research shows that AI can be a powerful enabling tool for strengthening administrative capacity. Meanwhile, Madan (2022) explores the deployment of AI in public administration, providing insight into how AI can ethically and effectively be integrated in public administration practice. This research highlights the importance of considering ethical aspects in the deployment of AI technology.

Wirtz & Muller (2019), in the book entitled "Research Handbook on Public Management and Artificial Intelligence", provide a comprehensive overview of the potential and challenges of AI in public management. They argue that AI has the potential to have a significant impact on public management. They identified various opportunities and challenges associated with the application of AI in public management, then stated that the application of AI in public management must be carried out carefully by considering the various challenges and opportunities involved. Therefore, it is necessary to emphasize the importance of ethics, skills and transparency in the application of AI in public management. Meanwhile, the book from Ebers & Tupay (2023) entitled "Artificial Intelligence and Machine Learning Powered Public Service Delivery in Estonia" offers insights into the application of AI and ML in public service delivery, with a focus on the Estonian experience. They emphasizes the potential of AI and machine learning to improve the efficiency, effectiveness and transparency of public services in Estonia, but they explain that it is important to overcome challenges and ensure responsible and fair use of AI, so that in its implementation AI by other countries can be adjusted to the circumstances of each country.

Those literatures show that the integration of AI in public administration offers significant opportunities for increased efficiency and effectiveness, but also requires a careful approach to ensure compliance with applicable ethics and regulations. Therefore, this research will discuss the influence of AI in the field of general administration within the Indonesian National Army (TNI-AD).

2. Method

This research uses a quantitative approach with an explanatory research design to examine the extent to which the TNI-AD's readiness in accepting AI can increase the effectiveness and efficiency of general administration within the TNI-AD. This research aims to identify the causal relationship between the independent variable (AI influences) and the dependent variable (administrative effectiveness and efficiency). The population in the research came from various groups within the TNI-AD, consisting of TNI-AD personnel serving, cadets/cadets pursuing education, civil servants who work within the TNI-AD, and partners who collaborate with agencies. The sample was selected using a purposive sampling technique with inclusion criteria in accordance with the research objectives and exclusion criteria that had been met by the respondents so that fair representation of the sample could be ensured. Data were collected through questionnaires; it is distributed to 100 respondents who could then draw samples according to research needs of 50 respondents with the consideration that a minimum of 30 respondents were needed so that the data drawn could minimize the risk of the sample not being representative and manageable (Kerlinger and Lee, 2000). The questionnaire was designed to measure respondents' perceptions of the effectiveness and efficiency of administration if AI could be implemented. The questionnaire will include Likert scale questions and will be pilot tested for validity before distribution. The questionnaire will measure variables such as speed of administration processes, data accuracy, user satisfaction, and reduced workload.

The collected data will be analyzed using descriptive statistics. The validity test was carried out to test the hypothesis. In validity testing, the KMO (Kaiser-Meyer-Olkin) and Bartlett tests were used. It was used to evaluate the suitability of the data for factor analysis. The KMO test measures how well the variables in a study are correlated and whether it is suitable for use. KMO values range between 0 and 1, with higher values indicating stronger correlation between variables. In general, a KMO value above 0.6 is considered as good enough. Values below 0.5 are considered inadequate, which indicating that factor analysis may not be appropriate for that dataset. Bartlett's test, on the other hand, tests the null hypothesis that the variables in the dataset are not correlated at all in the population. If the Bartlett test result is significant (the p-value is small), this indicates that there is enough evidence to reject the null hypothesis and conclude that the variables in the dataset are correlated, making it suitable for factor analysis.

Besides, the Anti-Image Matrices test was also conducted as additional factor analysis for the validity of the research model. Meanwhile, testing in the reliability test will use the Cronbach's Alpha value method to determine whether the results of the validity test are consistent. This analysis will be carried out using statistical software, namely SPSS.

3. Result

3.1 Respondents Perception Analysis

Data collected from 50 respondents within the TNI-AD show significant results related to the influence of AI in general administration. Data analysis of respondents' perception indicators is expressed in variables X1, X2, and Y. Variable X1 describes indicators of respondents' perceptions of AI. The following are the results of the analysis of this data.

3.1.1 Perception of the Efficiency and Effectiveness of Administrative Processes

Table 1. Variable X1.1

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		1	2.0	2.0	2.0
			10	20.0	20.0	22.0
	Netral Setuju		28	56.0	56.0	78.0
			11	22.0	22.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

The table above shows a representation of respondents' perceptions regarding the existence of AI in the process of efficiency and effectiveness toward administration. It denotes that the majority of respondents from the total percentage of 78% stated that the existence of AI could help the administrative process and can increase efficiency and effectiveness in the administrative process. This is indicated by the shorter time it takes to complete administrative tasks and manual errors if AI is implemented in the administrative process. As many as 20% of respondents felt that AI was not helpful enough in the administration process and did not bring significant changes to the completion of manual tasks and errors. Meanwhile, 2% of respondents felt that AI had not had the expected impact.

3.1.2 Perception of the AI Data Accuracy

Table 2. Variable X1.2

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		2	4.0	4.0	4.0
			6	12.0	12.0	12.0
	Netral Setuju		31	62.0	62.0	84.0
			11	22.0	22.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

The variable X1.2 in the table is a representation of respondents' perceptions of the accuracy of data generated from AI. It shows that a total percentage of 84% of respondents admitted that AI could increase the accuracy of the data produced when compared to data processed manually. AI helps in reducing data errors and speeding up the data validation process. Meanwhile, 12% of respondents felt unsure about changes in data accuracy after implementing AI in general administration systems, and 4% of respondents felt there had been no change at all.

3.1.3 Perception of the Reduced Workload

Table 3. Variable X1.3

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		1	2.0	2.0	2.0
			15	30.0	30.0	30.0
	Netral		22	44.0	44.0	68.0
			12	24.0	24.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

The table above is a representation of respondents' perceptions of reducing workload regarding the use of AI when applied in general administration. It shows that a percentage of 68% admitted that AI was able to reduce performance burden because it helped to focus more on more strategic tasks. Then, 30% of respondents admitted that AI had not yet fully been able to help reducing performance burdens, while 2% of respondents argued that the performance burdens had not increased, because the learning curve in using new technology had not been implemented properly.

3.1.4 Perception of Quality of Decision Making

Table 4. Variable X1.4

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		4	8.0	8.0	8.0
			9	18.0	18.0	18.0
	Netral		25	50.0	50.0	74.0
			12	24.0	24.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

This variable is a representation of respondents' perceptions of the quality of decision making if AI is applied in general administration. It shows that 74% admitted that AI improves the quality of decision making because the data presented is more accurate and the analysis is carried out faster when compared to manual process. However, 18% of respondents still did not feel that there is a significant change in the quality of decision making when using AI due to AI's limited understanding of the given context, so a detailed explanation was needed to produce the desired quality of decision making. Meanwhile, it turns out that 8% of respondents stated that the quality of decision making had decreased due to excessive dependence on the use of AI.

3.1.5 Confidence of User Satisfaction

Table 5. Variable X2.1

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		1	2.0	2.0	2.0
			14	28.0	28.0	28.0
	Netral		26	52.0	52.0	70.0
			9	18.0	18.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

This variable that is a representation of respondents' confidence in user satisfaction implementing AI is reported to be high (70%). It indicates good acceptance of the emergence of this new technology. Meanwhile, 28% felt neutral because they were used to changes and improvements in technological updates, and 2% felt dissatisfied with the emergence of AI technology because they had experienced difficulties in adapting and technical problems.

3.1.6 Confidence in the Effectiveness of Training with AI

Table 6. Variable X2.2

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		1	2.0	2.0	2.0
			21	42.0	42.0	44.0
	Netral		26	52.0	52.0	96.0
			2	4.0	4.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

This variable is a representation of respondents' confidence in the training they received to use the AI system being carried out effectively. It shows that 56% of respondents had received adequate training with the AI system. The training they received was in the form of using machine learning to assist in handling and solving problems on a limited scale. Meanwhile, 42% of respondents admitted that they had not received effective training in using AI systems, this was due to the limited military skills that had adapted AI systems. Apart from the discovery that training was not yet effective, it turned out that there were 2% of respondents who stated that AI training was not implemented effectively because their vocational field had not implemented an AI system at all.

3.1.7 Respondents Confidence in Task Completion Time

Table 7. Variable X2.3

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		6	12.0	12.0	8.0
			4	8.0	8.0	12.0
	Netral	26	52.0	52.0	80.0	
	Setuju	14	28.0	28.0	100.0	
	Sangat setuju Total	50	100.0	100.0		

Variables X2.3 represents the respondents' confidence in the time needed to complete administrative tasks that can be reduced and minimized. The majority of respondents (80%) admitted that AI has been able to reduce time so that it can minimize the time to complete a task. This form of trust is a representation of respondents who use AI tools to shorten the time associated with decision making in general administration activities. In addition, AI can operate 24 hours non-stop compared to humans who have limited working capacity. As many as 8% of respondents stated that the time for completing tasks using AI tools had not fully met expectations, because internet network problems could hinder the AI process in managing data so that it took longer to complete the task. Meanwhile, 12% felt dissatisfied because demands for task completion times were increasing due to dependence on assistance from AI.

3.1.8 Confidence in Document Management Errors

Table 8. Variable X2.4

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		4	8.0	8.0	8.0
			9	18.0	18.0	18.0
	Netral	25	50.0	50.0	74.0	
	Setuju	12	24.0	24.0	100.0	
	Sangat setuju Total	50	100.0	100.0		

Variable X2.4 is as a representation of respondents' confidence in AI which can help reducing the number of errors in administrative documents. The result denotes that 74% of respondents felt that adopting an AI system can enable errors in document processing to be minimized because AI can achieve a higher level of accuracy when compared to work carried out by humans which often experiences human error. Next, 18% of respondents felt neutral because they experienced minimal levels of human error in carrying out their duties, and 8% of respondents felt there had been no change.

3.1.9 Acceptance of Improvement in Service Quality

Table 9. Variable Y1

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		2	4.0	4.0	4.0
			9	18.0	18.0	18.0
	Netral Setuju		32	64.0	64.0	78.0
			7	14.0	14.0	100.0
	Sangat setuju Total			50	100.0	100.0

This variable represents respondents' acceptance of improvements in the quality of administrative services provided and received. The majority of respondents (78%) stated that the existence of an AI system can provide improvements in service quality, especially in the administrative sector. This improvement in service quality can be felt, one of the ways is with the Chatbot feature which is an implementation of an AI digital assistant. This feature can help humans to search for general administrative information, so that humans don't feel too many queues because they have been helped by one of the features. There are 18% of respondents who stated that they were neutral because they felt that the improvement in the quality of administrative services after using AI was not optimal because they sometimes still encountered queues in various administrative service sectors. Meanwhile, 4% of respondents did not feel at all because there had been an increase in service quality due to limited access in border areas.

3.1.10 Acceptance of the Focus of Administrative Staff

Table 10. Variable Y2

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		2	4.0	4.0	4.0
			8	16.0	16.0	16.0
	Netral Setuju		26	52.0	52.0	80.0
			14	28.0	28.0	100.0
	Sangat setuju Total			50	100.0	100.0

This variable represents the respondent's acceptance as administrative staff who focuses on strategic tasks. A total of 80% of respondents indicated that having an AI system can help administrative staff to focus more on strategic tasks because the AI system can help organize tasks on various priority scales. Then, 16% of respondents were neutral, and 4% of respondents experienced no change in their focus on completing tasks.

3.1.11 Acceptance of AI roles in the future of TNI-AD

Table 11. Variable Y3

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid setuju	Sangat tidak		2	4.0	4.0	4.
			7	14.0	14.0	14.0
	Netral Setuju		28	56.0	56.0	82.0
			13	26.0	26.0	100.0
	Sangat setuju		50	100.0	100.0	
Total						

The table above represents respondents' acceptance of future developments in AI which will continue to play an important role in the administrative sphere, especially in the field of TNI-AD administration. The majority of respondents (82%) admitted that in the future development of AI technology it will always play an important role, especially in the administrative sector. Seeing AI systems in various sectors other than administration which always developing rapidly is proof that in the future AI can play an important role. As many as 14% of respondents were neutral because future prediction factors do not necessarily mean that AI can play an important role, and 4% of respondents did not agree that AI can play an important role. It is possible that in the future because there will be new technology that is more sophisticated compared to AI.

3.2 Validity Test

To determine the validity of the research, the main factors for calculating validity were the KMO (Kaiser-Meyer-Olkin) and Bartlett tests. KMO and Bartlett's tests are two methods used in exploratory factor analysis (EFA) to evaluate the suitability of data to factor analysis. The KMO (Kaiser-Meyer-Olkin) test measures the degree of cohesion between variables, while the Bartlett test examines the null hypothesis that the identity correlation matrix (diagonal matrix) is the same as the population correlation matrix. KMO values range between 0 and 1, and values above 0.6 are considered good enough for factor analysis. Based on the significant value of Bartlett's Test of Sphericity, it can indicate that the population correlation matrix is not identical, so factor analysis can be carried out. The following is the results of the KMO and Bartlett test on the independent variable (X) and dependent variable (Y).

Table 12. KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.820
Barlett's Test of Sphericity	Approx. Chi-Square	444.620
	df	55
	Sig.	.000

Based on the results of the KMO and Bartlett tests, it can be seen that the value of the KMO measure of sampling adequacy is 0.820 or greater than 0.5, with a significance value of 0.000 or less than 0.05. A KMO value that is greater than 0.6 and a p-value from Bartlett's test that is smaller than 0.05 indicates that the data is suitable for factor analysis. So, it can be concluded

that this research measuring tool is valid because the results aimed at higher values indicate a stronger correlation between variables and can be continued to the next stage of factor analysis.

To support the KMO and Bartlett tests, the Anti-Image Matrices through MSA test was carried out. The MSA test is useful for finding out and determining variables that are suitable for use in factor analysis. The requirement for factor analysis to be fulfilled is an MSA value greater than 0.50. The following is the MSA test result.

Table 13. MSA Test

Anti-image Matrices												
	X1.1	X1.2	X1.3	X1.4	X2.1	X2.2	X2.3	X2.4	Y1	Y2	Y3	
Anti-image Covariance	X1.1	.148	-.081	-.088	.026	-.063	-.074	-.030	-.030	.022	.047	-.034
	X1.2	-.081	.295	.123	-.187	-.090	.127	.004	-.006	.029	-.051	.015
	X1.3	-.088	.123	.263	-.154	-.053	.120	-.008	-.015	.015	-.072	.039
	X1.4	.026	-.187	-.154	.358	.028	-.107	-.014	.053	-.021	.030	-.038
	X2.1	-.063	-.090	-.053	.028	.265	-.117	.005	.004	-.057	.008	.039
	X2.2	-.074	.127	.120	-.107	-.117	.697	.027	-.028	.067	-.021	-.052
	X2.3	-.030	.004	-.008	-.014	.005	.027	.169	-.097	.017	-.078	.015
	X2.4	-.030	-.006	-.015	.053	.004	-.028	-.097	.147	-.056	.029	-.012
	Y1	.022	.029	.015	-.021	-.057	.067	.017	-.056	.177	-.056	-.112
	Y2	.047	-.051	-.072	.030	.008	-.021	-.078	.029	-.056	.273	-.078
Y3	-.034	.015	.039	-.038	.039	-.052	.015	-.012	-.112	-.078	.208	
Anti-image Correlation	X1.1	.848 ^a	-.386	-.448	.112	-.320	-.231	-.191	-.202	.137	.236	-.193
	X1.2	-.386	.717 ^a	.440	-.576	-.321	.279	.019	-.027	.125	-.179	.059
	X1.3	-.448	.440	.772 ^a	-.501	-.202	.280	-.036	-.076	.070	-.268	.168
	X1.4	.112	-.576	-.501	.737 ^a	.092	-.214	-.057	.230	-.085	.095	-.139
	X2.1	-.320	-.321	-.202	.092	.886 ^a	-.272	.024	.022	-.264	.030	.168
	X2.2	-.231	.279	.280	-.214	-.272	.629 ^a	.079	-.088	.191	-.048	-.138
	X2.3	-.191	.019	-.036	-.057	.024	.079	.871 ^a	-.614	.097	-.363	.080
	X2.4	-.202	-.027	-.076	.230	.022	-.088	-.614	.859 ^a	-.349	.144	-.070
	Y1	.137	.125	.070	-.085	-.264	.191	.097	-.349	.819 ^a	-.255	-.584
	Y2	.236	-.179	-.268	.095	.030	-.048	-.363	.144	-.255	.859 ^a	-.326
Y3	-.193	.059	.168	-.139	.168	-.138	.080	-.070	-.584	-.326	.833 ^a	

a. Measures of Sampling Adequacy(MSA)

The results of the MSA test on the first independent variable (X1) as an indicator of respondents' perceptions can be seen on the Anti-Image Correlation that the MSA value of X1.1 is 0.848, the MSA value of X1.2 is 0.717, the MSA value of X1.3 is 0.772, and the MSA value of X1.4 is 0.737.

Next, the results of the MSA test on the second independent variable (X2) as an indicator of respondent trust, it can be seen on the Anti-Image Correlation that the MSA value of X2.1 is 0.886, the MSA value of X2.2 is 0.629, the MSA value of X2.3 is 0.871, and the MSA value of X2.4 is 0.859.

Meanwhile, the results of the MSA test on the dependent variable (Y) as an indicator of respondents' acceptance participation, can be seen that the MSA value of Y1 is 0.819, the MSA value of Y2 is 0.859, and the MSA value of Y3 is 0.833. All measurement of sampling adequacy (MSA) values are greater than 0.5. So, it can be concluded that the second requirement of this factor analysis is fulfilled and valid.

4. Conclusion

Based on the analysis results from respondents' answers, it can be seen that in the field of general administration, the TNI-AD believes that AI has a big influence in it. Respondents believe that they are ready to implement AI to simplify work in the administrative sector so that efficiency and effectiveness can be realized in managing administrative tasks in the future. Based on the enthusiasm of respondents, on average more than 70% admitted that AI was really needed, this was assessed from various factors that had previously been analyzed. Next, judging from the validity test and reliability test, it shows that during this research process valid data can be provided with the results of the KMO and Bartlett tests of sampling adequacy value of 0.820 or greater than 0.5, with a value significance is 0.000 or less than 0.05.

However, if it is accumulated there are still more than 20% of respondents who are not ready to accept an AI system if it is implemented in the field of general administration of the Indonesian Army. There are still several obstacles felt by respondents regarding AI when it will be implemented, they are: limited internet network access, inadequate AI training, limited access to work areas at the border, and the difficulty of adaptation felt by respondents if AI is implemented. Based on this, it shows that there are still some duties for the TNI-AD to make improvements if AI is to be implemented, especially in user training and smoother integration of AI systems so that they can adapt. In the future, continuous efforts are needed to improve training, system development and change management before implementing AI so that later the use of AI can provide maximum potential for the TNI-AD's general administration activities.

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