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Administrative. Governance. and. Legal. Accountability. for. the. Use. of. Artificial. Intelligence. in. Military. Operations:. Compliance. with. International. Humanitarian. Law. –. An. Applied. Study. of. the. Gaza. War. (2023–2026)

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Abstract

This study examines the role of administrative governance and legal accountability in regulating artificial intelligence (AI) use in military operations and their relationship with compliance with international humanitarian law (IHL), with reference to the Gaza War (2023–2026). A quantitative descriptive-analytical design was adopted, using an electronic questionnaire administered to 337 practicing lawyers in the Gaza Strip, of whom 294 valid responses were obtained (87.24%). Data were analyzed using SPSS 26. Findings indicated high perceived levels of administrative governance and legal accountability (M = 4.20; 83.98%) and IHL compliance (M = 3.70; 74.07%). Administrative governance and legal accountability had a significant positive effect on IHL compliance ($\beta = 0.435$, $p < .001$), explaining 18.9% of the variance. Authorities and responsibilities, human oversight and review, and oversight and supervision significantly predicted compliance. No significant differences were found across demographic or professional variables.

Keywords: Administrative Governance; Legal Accountability; Artificial Intelligence; Military Operations; International Humanitarian Law; Gaza War.

Introduction

The world is witnessing rapid developments in the use of artificial intelligence (AI) in the military domain AI applications have expanded beyond data processing, intelligence analysis, and logistical support to include surveillance, reconnaissance, operational planning, decision support, target identification and assessment, and risk evaluation These developments enable AI systems to process large volumes of information rapidly, raising important questions regarding the relationship between human judgment, algorithmic outputs, and legal decision-making Zurek et al (2023) argue that autonomous military systems can incorporate mechanisms to account for the requirements of international humanitarian law (IHL), highlighting the importance of integrating legal requirements throughout the design, development, testing, validation, deployment, and operation of AI-enabled systems.

The use of AI in military operations also presents challenges concerning the fundamental principles of IHL, particularly distinction, proportionality, and feasible precautions in attack Jain (2023) emphasizes that errors generated by autonomous systems do not eliminate the legal obligations of individuals and entities involved in their development, deployment, or operation Rather, such errors raise questions concerning the allocation and attribution of responsibility, particularly when technological limitations may contribute to civilian harm Similarly, Sati (2024) argues that AI autonomy does not confer independent legal status capable of relieving

human actors of responsibility, emphasizing the need for clear institutional arrangements defining human roles and responsibilities in military decision-making.

Accordingly, the issue extends beyond AI performance to encompass human responsibility, institutional governance, legal accountability, and review of AI-influenced decisions Administrative governance is therefore an important component of regulating AI in military operations through defining authorities and responsibilities, establishing review and verification procedures, ensuring appropriate human oversight, managing technological and operational risks, and maintaining accountability Khalil and Krishna Raj (2024) emphasize that the legality of autonomous weapon systems must be assessed against the fundamental principles of IHL, particularly distinction, proportionality, and precautions Effective governance, institutional oversight, clearly defined responsibilities, risk management, and human review are therefore essential to ensuring that AI-enabled military operations remain subject to applicable legal requirements.

Study Problem

The rapid development of AI technologies has expanded their use in military operations, including intelligence gathering, surveillance, operational planning, decision-making, target identification, and risk assessment Unlike conventional information technologies, AI-based systems can generate predictions, classifications, recommendations, and assessments that influence military decisions This development has increased the need to examine the institutional, administrative, and legal arrangements governing the use of AI, particularly when algorithmic outputs may influence decisions concerning the use of force.

The legal assessment of AI-supported military decisions requires consideration of the circumstances and information available at the time of decision-making, the reliability and limitations of AI systems, and the extent of human ability to review, verify, question, or override AI-generated outputs Accordingly, governance mechanisms are closely connected to legal accountability, as responsibility depends on clearly defined authorities, procedures, documentation, supervision, and human involvement.

The Gaza War since 2023 provides an important context for examining these issues Discussions concerning AI-supported military operations have raised questions regarding intelligence analysis, target assessment, decision support, human oversight, accountability, and compliance with IHL However, this study distinguishes between documented information, reported claims, and independently established facts and does not assume any predetermined legal conclusion concerning a specific military operation or technological system.

Against this background, the study examines administrative governance and legal accountability for the use of AI in military operations and their relationship with compliance with IHL Administrative governance and legal accountability are examined through six dimensions: transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review IHL compliance is examined through four dimensions: distinction, proportionality, precautions in attack, and protection of civilians and civilian objects.

The study adopts the perspectives of practicing lawyers in the Gaza Strip, whose professional background provides a relevant basis for assessing perceptions of governance, accountability, and compliance with legal and humanitarian requirements AI is treated as the substantive and operational context of the study rather than as a separate independent or mediating variable Accordingly, the study focuses on the institutional, administrative, and legal mechanisms governing AI use in military operations and their relationship with compliance with applicable IHL requirements.

Thus, the research problem centers on determining the perceived level of administrative governance and legal accountability governing the use of AI in military operations, assessing the perceived level of IHL compliance, and examining whether administrative governance and

legal accountability have a statistically significant effect on IHL compliance from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).

Accordingly, the central research problem is formulated through the following question:

What is the effect of administrative governance and legal accountability in the use of artificial intelligence in military operations on compliance with international humanitarian law from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026)?

The following sub-questions arise from the main research question:

1. What is the perceived level of administrative governance and legal accountability governing the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026)?
2. What is the perceived level of compliance with international humanitarian law in the context of the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026)?
3. Is there a statistically significant effect of administrative governance and legal accountability in the use of artificial intelligence in military operations on compliance with international humanitarian law from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026)?
4. Are there statistically significant differences in respondents' perceptions of the level of administrative governance and legal accountability and compliance with international humanitarian law attributable to demographic and professional variables, namely gender, age group, educational qualification, years of professional practice, area of legal practice, and knowledge of international humanitarian law?

Study Objectives

The main objective of this study is to examine the effect of administrative governance and legal accountability in the use of artificial intelligence in military operations on compliance with international humanitarian law from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).

To achieve this main objective, the study seeks to:

5. **Identify the perceived level of administrative governance and legal accountability governing the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).**
6. **Assess the perceived level of compliance with international humanitarian law in the context of the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).**
7. **Examine the statistically significant effect of administrative governance and legal accountability in the use of artificial intelligence in military operations on compliance with international humanitarian law from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).**
8. **Identify whether statistically significant differences exist in respondents' perceptions of administrative governance and legal accountability and compliance with international humanitarian law according to selected demographic and professional variables, namely gender, age group, educational qualification, years of professional practice, area of legal practice, and knowledge of international humanitarian law.**

The importance of study

The significance of this study stems from the growing use of artificial intelligence in military operations and the increasing need to examine the governance and legal accountability mechanisms associated with its use. The study contributes to the academic literature by examining the relationship between **administrative governance and legal accountability for the use of artificial intelligence in military operations** and **compliance with international humanitarian law**, integrating dimensions of transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review within a single analytical framework.

The study also has practical and legal significance because it examines compliance with international humanitarian law through the dimensions of **distinction, proportionality, precautions in attack, and protection of civilians and civilian objects**. Its findings may provide useful insights for legal professionals, policymakers, researchers, and institutions concerned with the governance of emerging military technologies by highlighting the role of institutional procedures, allocation of responsibilities, oversight, risk management, and human review in supporting compliance with applicable IHL requirements.

The study further provides an applied perspective by examining these issues from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026). This perspective may contribute empirical insight into the perceived relationship between governance and accountability mechanisms and IHL compliance in the context of AI-enabled military operations. AI is treated in the study as the substantive and operational context rather than as a separate independent or mediating variable, while the study avoids making predetermined legal judgments concerning the lawfulness of particular military operations.

Study limits

1. **Subject Matter Limitation:** The study focuses on examining the effect of **administrative governance and legal accountability for the use of artificial intelligence in military operations** on **compliance with international humanitarian law**. It examines the perceived level of administrative governance and legal accountability, the perceived level of compliance with international humanitarian law, and the statistical effect between the two variables. Administrative governance and legal accountability are examined through six dimensions: **transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review**. Compliance with international humanitarian law is examined through four dimensions: **distinction, proportionality, precautions in attack, and protection of civilians and civilian objects**.
2. **Geographical Limitation:** The study is geographically limited to the **Gaza Strip**.
3. **Human Limitation:** The study is limited to **practicing lawyers in the Gaza Strip**, who constitute the target population of the study.
4. **Temporal Limitation:** The study covers the period of the **Gaza War from 2023 to 2026**, which constitutes the temporal context within which the study variables are examined.
5. **Applied Limitation:** The study examines administrative governance and legal accountability and their relationship with compliance with international humanitarian law within the context of **AI-enabled military operations during the Gaza War (2023–2026)**. Artificial intelligence is therefore treated as the substantive and

operational context of the study rather than as a separate independent or mediating variable in the research model.

Literature Review

2.1 Artificial Intelligence in Military Operations and Its Legal Context

Recent advances in artificial intelligence (AI) have expanded its military applications beyond autonomous weapons to include intelligence analysis, surveillance and reconnaissance, operational planning, data processing, target identification, and decision support Grand-Clément (2023) emphasizes that military AI encompasses a broad range of functions that may directly or indirectly influence military operations and decision-making.

The legal significance of these applications becomes particularly important when AI-generated outputs influence decisions concerning the use of force Such systems may process information, identify patterns, generate assessments, and recommend courses of action, thereby shaping the information available to human decision-makers Accordingly, legal concerns extend beyond technical accuracy to the allocation of authority and responsibility, system testing and validation, and the ability of human personnel to understand, verify, challenge, or override AI outputs Bode and Chandler (2026) emphasize that meaningful human control should extend throughout the AI life cycle, including research, development, testing, evaluation, verification, and validation.

The literature also identifies algorithmic bias, opacity, automation bias, and accelerated decision-making as important challenges Bruun and Bo (2025) demonstrate that bias may affect distinction, proportionality, and precautions in attack, while Wolf (2025) examines AI-enabled decision support in relation to target verification and precautions under IHL Accordingly, this study conceptualizes **Administrative Governance and Legal Accountability for the Use of AI in Military Operations** as the independent variable, comprising six dimensions: transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review **Compliance with IHL** is the dependent variable, conceptualized as a single latent construct measured through items addressing distinction, proportionality, precautions in attack, and the protection of civilians and civilian objects AI represents the substantive and operational context rather than a separate independent or mediating variable.

2.2 Artificial Intelligence in Military Operations

Military AI refers to technologies capable of processing large volumes of information, recognizing patterns, classifying data, generating predictions, and providing recommendations to support military tasks Grand-Clément (2023) notes that military AI extends across various organizational functions, while the ICRC and Geneva Academy (2024) highlight the growing relevance of AI-enabled decision-support systems in decisions concerning the use of force Although such systems may not make legally autonomous decisions, their outputs can substantially influence human judgment by shaping the information presented and the alternatives considered A distinction should therefore be made between AI used for information processing and decision support and weapon systems with varying degrees of autonomy in target selection or engagement From a governance perspective, AI must be assessed throughout its life cycle because design choices, training data, testing, validation, and operational conditions may influence system behavior Bode and Chandler (2026) therefore emphasize continuous human–machine interaction, making governance, oversight, and accountability essential components of military AI.

2.3 Legal and Humanitarian Challenges of Military AI

The use of AI in military operations raises challenges concerning distinction, proportionality, precautions in attack, and civilian protection These challenges arise from the interaction

between context-dependent legal judgments and systems that may contain errors, biases, uncertainty, or limited explainability.

2.3.1 Algorithmic Bias Bias may result from training data, system design, variable selection, or operational conditions Bruun and Bo (2025) demonstrate that military AI bias may affect distinction, proportionality, and precautions in attack Consequently, bias management should be addressed through technical, operational, and institutional safeguards.

2.3.2 Opacity and Explainability Limited explainability may hinder oversight and accountability because decision-makers require sufficient information to assess the reliability and limitations of AI outputs Documentation and traceability are therefore essential for reviewing system inputs, outputs, versions, and human decisions.

2.3.3 Automation Bias Automation bias refers to excessive reliance on automated recommendations, particularly under time pressure or information overload Bode and Chandler (2026) emphasize verification, continuous training, documentation, and cross-checking as mechanisms for maintaining meaningful human oversight.

2.3.4 Decision-Making Speed and Human Judgment Although AI can accelerate information processing, excessive speed may reduce the time available for contextual legal assessment Abbasi and He (2026) argue that AI-enabled decision support may influence proportionality assessments through informational salience, bias, automation bias, and accelerated decision-making Proportionality, however, remains a qualitative and context-dependent legal judgment that cannot be reduced to an automated calculation.

2.4 Administrative Governance of Military AI

Administrative governance refers to the institutional rules, procedures, and arrangements governing the development, acquisition, testing, deployment, operation, monitoring, and review of military AI systems It determines not only whether a system functions technically but also who may use it, who supervises it, and how errors or unreliable outputs are addressed Bode and Chandler (2026) emphasize the importance of governance throughout the AI life cycle.

In this study, administrative governance and legal accountability are integrated into one independent variable because governance establishes the institutional environment for AI use, while accountability provides mechanisms for assigning responsibility and reviewing decisions.

2.4.1 Transparency Transparency concerns the availability of relevant information about system capabilities, limitations, reliability, and use In military settings, it does not necessarily require public disclosure of sensitive information but requires sufficient information for authorized technical, legal, and institutional actors to conduct effective evaluation and review.

2.4.2 Accountability Accountability concerns mechanisms for identifying those responsible for decisions, actions, and failures AI does not transfer legal responsibility to an algorithm; responsibility remains associated with the human actors and institutions involved in system development, authorization, deployment, operation, and supervision Scharf and Bazzy (2025) highlight the importance of determining human responsibility where AI-generated outputs influence decisions associated with military operations.

2.4.3 Oversight and Supervision Effective oversight requires the ability to monitor system performance, evaluate outputs, and intervene when necessary Bode and Chandler (2026) emphasize that human oversight should operate throughout the AI life cycle, while Wolf (2025) highlights the continuing importance of human verification in AI-supported targeting.

2.4.4 Authorities and Responsibilities Clear allocation of authority determines who may develop, acquire, operate, modify, suspend, or override an AI system Responsibility may

extend across those who design, test, approve, and operate the system, supporting a life-cycle approach to accountability (Bode & Chandler, 2026).

2.4.5 Risk Management Risk management involves identifying, assessing, mitigating, monitoring, and reviewing risks associated with AI, including bias, technical failure, unpredictability, data manipulation, and differences between testing and operational environments Bruun and Bo (2025) and Wolf (2025) emphasize the importance of technical, operational, and institutional safeguards for addressing such risks.

2.4.6 Human Oversight and Review Human oversight is central to responsible military AI because IHL requires context-dependent judgments based on available information and surrounding circumstances Bode and Chandler (2026) emphasize verification, training, documentation, and the capacity to respond to unexpected situations, while Wolf (2025) stresses continued human verification in AI-supported targeting.

2.5 Legal Accountability for Military AI

Legal accountability concerns the identification of persons and institutions responsible for decisions and outcomes associated with AI systems Because AI-enabled decision-making may involve commanders, operators, technical personnel, developers, legal advisers, and procurement authorities, clearly defined roles and responsibilities are essential Cotino Hueso and Gómez de Ágreda (2024) emphasize human responsibility, transparency, traceability, reliability, and oversight throughout the AI life cycle, while Scharf and Bazzy (2025) highlight challenges of accountability when AI recommendations influence military decisions.

Effective accountability also requires traceability, including the ability to identify the data, system version, inputs, outputs, and human decision involved Accordingly, this study defines legal accountability as the existence of mechanisms for identifying human and institutional responsibility for the development, approval, operation, monitoring, and review of military AI systems and related decisions.

2.6 Legal Review of AI-Enabled Military Systems

Legal review is a preventive mechanism for assessing whether new weapons, means, and methods of warfare comply with IHL Goussac and Liivoja (2025) emphasize the importance of legal reviews under Article 36 of Additional Protocol I and their integration into decisions concerning military capability development and acquisition Because AI behavior may change through software modifications, data updates, or operational conditions, legal review should not necessarily be treated as a one-time process Bode and Chandler (2026) emphasize testing, evaluation, verification, and validation throughout the AI life cycle, while Abbasi and He (2026) highlight continuing legal assessment where AI-enabled decision support affects targeting and proportionality Thus, this study treats legal review as a preventive governance mechanism supporting compliance with IHL.

2.7 Compliance with International Humanitarian Law

IHL provides the principal legal framework governing the conduct of hostilities and seeks to limit the effects of armed conflict, particularly by protecting civilians and civilian objects The emergence of AI does not create a separate legal regime; rather, existing IHL rules apply to new technologies and methods of warfare Cotino Hueso and Gómez de Ágreda (2024) emphasize the importance of integrating IHL requirements into AI-enabled military systems, while Bruun and Bo (2025) demonstrate that AI-related bias may affect distinction, proportionality, and precautions Accordingly, this study conceptualizes **Compliance with IHL as a single latent dependent variable**, measured through questionnaire items addressing four principal requirements: **distinction, proportionality, precautions in attack, and protection of civilians and civilian objects**.

2.7.1 Distinction The principle of distinction requires parties to distinguish between civilians and combatants and between civilian objects and military objectives AI may influence this process through classification and target identification Bruun and Bo (2025)

highlight the risks of bias, while Wolf (2025) emphasizes verification in AI-supported targeting.

2.7.2 Proportionality Proportionality prohibits attacks expected to cause excessive incidental civilian harm relative to the anticipated concrete and direct military advantage Abbasi and He (2026) emphasize that proportionality remains a qualitative and contextual legal judgment AI may support the assessment but cannot replace the required human legal judgment.

2.7.3 Precautions in Attack IHL requires feasible precautions to avoid or minimize civilian harm In AI-enabled operations, such precautions may involve system selection, testing, validation, risk assessment, and operational verification Wolf (2025) and Bruun and Bo (2025) emphasize the importance of verification and safeguards against AI-related bias and uncertainty.

2.7.4 Protection of Civilians and Civilian Objects Civilian protection is closely connected to distinction, proportionality, and precautions AI-related errors and bias may affect assessments of anticipated civilian harm (Bruun & Bo, 2025; Abbasi & He, 2026) Military AI should therefore be evaluated not only by technical performance but also by its compatibility with institutional and legal arrangements that support civilian protection.

2.8 Military AI in the Context of the Gaza War, 2023–2026

The Gaza War since 2023 provides an important contemporary context for examining AI-enabled military operations, particularly amid reports concerning AI-supported systems in functions associated with targeting Academic analysis requires distinguishing documented information from reported claims and independently established facts Scharf and Bazzy (2025) examine the Gaza context in relation to accountability for decisions influenced by AI-enabled systems, while Wolf (2025) and Abbasi and He (2026) discuss reported AI-supported systems and their implications for verification, precautions, and proportionality The present study does not make a predetermined legal judgment concerning any particular military operation Instead, the Gaza context provides an applied setting for examining governance, accountability, human oversight, risk management, and compliance with IHL requirements.

2.9 Theoretical Relationship Between Administrative Governance and Legal Accountability and Compliance with IHL

The theoretical framework of this study is based on the premise that military AI requires institutional and legal mechanisms capable of governing technological systems, defining responsibilities, managing risks, and maintaining meaningful human oversight Administrative governance and legal accountability establish mechanisms through which AI systems may be developed, tested, deployed, monitored, and reviewed, while also supporting the identification of responsibility for decisions associated with their use.

The literature indicates that effective human oversight requires more than the presence of a human decision-maker; it requires adequate information, expertise, time, authority, verification, and intervention mechanisms (Bode & Chandler, 2026) Similarly, transparency, traceability, reliability, accountability, and human oversight are important conditions for responsible AI use (Cotino Hueso & Gómez de Ágreda, 2024) These mechanisms become particularly significant when AI-generated information or recommendations influence decisions concerning the use of force Accordingly, **Administrative Governance and Legal Accountability for the Use of AI in Military Operations** constitute the independent variable, represented by six dimensions: **transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review Compliance with IHL** constitutes a **single latent dependent variable without sub-dimensions**, measured through multiple items reflecting **distinction, proportionality, precautions in attack, and protection of civilians and civilian objects** AI is treated as the substantive and operational context rather than as a separate independent or mediating variable

The proposed relationship therefore examines whether stronger governance and accountability mechanisms surrounding AI-enabled military operations are statistically associated with higher perceived compliance with IHL.

2.10 Theoretical Model of the Study

Based on the preceding theoretical discussion and the relevant literature, the study proposes a theoretical model linking **Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations** to **Compliance with International Humanitarian Law**.

The independent variable is represented by six dimensions: **Transparency, Accountability, Oversight and Supervision, Authorities and Responsibilities, Risk Management, and Human Oversight and Review**. The dependent variable, **Compliance with International Humanitarian Law**, is specified as a **single latent construct without sub-dimensions** and is measured through multiple items reflecting the principal IHL requirements relevant to the conduct of hostilities, including distinction, proportionality, precautions in attack, and protection of civilians and civilian objects.

The model therefore proposes that administrative governance and legal accountability may be associated with the level of compliance with international humanitarian law in the context of AI-enabled military operations. This relationship is examined empirically from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).



Figure 1. Theoretical Model of the Study

The model assumes that governance and accountability mechanisms operate before, during, and after AI deployment. Through transparency and traceability, decision processes can be documented; through accountability and clearly defined authority, responsibility can be assigned; through risk management and oversight, potential errors can be identified and mitigated; and through human review, AI outputs can be evaluated within their operational and legal context.

Thus, the theoretical model proposes that stronger administrative governance and legal accountability may enhance the institutional capacity to apply IHL principles in AI-enabled military operations.

METHODOLOGY

3.1 Research Method

This study adopts a quantitative approach using a descriptive and analytical research design to examine the effect of Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations on Compliance with International Humanitarian Law. The quantitative approach is appropriate because the study seeks to measure respondents' perceptions of the study variables and examine the statistical relationship and direct effect between them.

The independent variable is Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations, which is operationalized through six dimensions: transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review. The dependent variable is Compliance with International Humanitarian Law, which is conceptualized as a single latent construct without sub-dimensions and measured through multiple questionnaire items reflecting the principal IHL requirements relevant to the conduct of hostilities, including distinction, proportionality, precautions in attack, and protection of civilians and civilian objects.

Artificial intelligence is treated as the substantive and operational context of the study rather than as a separate independent or mediating variable. Accordingly, the study examines a direct relationship between one independent variable and one dependent variable.

3.2 Study Population and Sample

3.2.1 Study Population

The population of the study consists of 2,701 practicing lawyers in the Gaza Strip, according to data from the Palestinian Central Bureau of Statistics based on data from the Palestinian Bar Association for 2023. The selection of practicing lawyers as the target population is consistent with the legal nature of the research problem, which concerns legal accountability for the use of artificial intelligence in military operations and compliance with international humanitarian law. The selection of this population enables the study to examine the research problem from a professional legal perspective. The questionnaire addresses issues related to legal accountability, allocation of authorities and responsibilities, human oversight, distinction, proportionality, precautions in attack, and protection of civilians and civilian objects. These issues are directly relevant to the legal subject matter of the study and therefore make practicing lawyers an appropriate target population for examining the research questions.

3.2.2 Study Sample

Given the study population of **2,701 practicing lawyers** and the practical circumstances of conducting field research in the Gaza Strip, a sample of **337 lawyers** was determined using the **Stephen Thompson sample-size equation**, at a **95% confidence level** and **5% margin of error**. Practicing lawyers were selected because the study addresses the legal and professional dimensions of **administrative governance and legal accountability for the use of artificial intelligence in military operations and compliance with international humanitarian law**. Their legal education and professional experience make them appropriate for assessing issues such as legal accountability, the allocation of authorities and responsibilities, human oversight, distinction, proportionality, precautions in attack, and the protection of civilians and civilian objects.

The questionnaire was administered electronically to facilitate access to respondents under the practical conditions of fieldwork in the Gaza Strip. Of the **337 questionnaires distributed, 294 were returned**, representing a **response rate of**

87.24%. Questionnaires meeting the completeness and validity requirements were included in the final statistical analysis.

3.3 Study Instrument (Questionnaire)

Primary data are collected using a structured electronic questionnaire developed specifically for the purposes of the present study. The questionnaire was constructed based on the theoretical framework, relevant legal literature, and previous academic studies addressing artificial intelligence in military operations, administrative governance, legal accountability, and compliance with international humanitarian law. The instrument translates the theoretical dimensions of the two principal study variables into measurable statements that can be assessed by practicing lawyers. The questionnaire consists of three main sections. The first section collects general demographic and professional information about respondents. The second section measures the independent variable, Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations. The third section measures the dependent variable, Compliance with International Humanitarian Law.

3.3.1 General Information

The first section collects respondents' general and professional characteristics through six variables: **gender, age, academic qualification, years of legal practice, area of legal practice, and level of knowledge of international humanitarian law**. Gender is classified as **male or female**, age into **less than 30, 30–39, 40–49, and 50 years or above**, and academic qualification into **bachelor's, master's, and doctoral degrees**. Years of legal practice are categorized as **less than 5, 5–10, 11–15, and more than 15 years**, while legal practice areas include **international law, criminal law, civil law, human rights, and other legal fields**. Knowledge of international humanitarian law is assessed using a **five-point scale from very limited to very high**. These variables describe the sample and provide a basis for examining differences in perceptions of **administrative governance, legal accountability, and compliance with international humanitarian law** according to relevant demographic and professional characteristics.

3.3.2 Study Variables: Governance, Accountability, and IHL Compliance

The second and third sections of the questionnaire address the two principal study variables. The second section measures the independent variable, Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations, through six dimensions: transparency, accountability, oversight and supervision, authorities and responsibilities, risk management, and human oversight and review. Each dimension consists of six items, resulting in 36 items for the independent variable.

The third section measures the dependent variable, Compliance with International Humanitarian Law, as a single latent construct without sub-dimensions. It consists of 15 items designed to assess respondents' perceptions of compliance with the principal requirements of international humanitarian law relevant to the conduct of hostilities, including distinction, proportionality, precautions in attack, and protection of civilians and civilian objects. These principles serve as the substantive basis for item development and measurement but are not treated as separate statistical dimensions of the dependent variable.

Accordingly, the questionnaire contains a total of 51 items, comprising 36 items for the independent variable and 15 items for the dependent variable, as presented in Table 1.

Table 1, Questionnaire Dimensions and Items

Variable	Dimension	Number. of. Items
Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations	Transparency	6
	Accountability	6
	Oversight and Supervision	6
	Authorities and Responsibilities	6
	Risk Management	6
	Human Oversight and Review	6
Compliance with International Humanitarian Law	15	
Total	**51 Items**	

3.4 Measurement Scale

The questionnaire uses a five-point Likert scale to measure respondents' degree of agreement with the statements. Respondents indicate their level of agreement according to the following scale:

Table 2, Likert Scale Scores

Response	Score
Strongly Disagree	
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

The five-point Likert scale provides quantitative values that can be used to calculate descriptive statistics and conduct the inferential statistical analyses required to answer the research questions and test the study hypotheses.

3.5 Instrument Validity

To establish the content validity of the questionnaire, the instrument was reviewed by a group of academic and professional experts with relevant expertise in law, international humanitarian law, artificial intelligence, research methodology, and measurement. The experts assessed the clarity, relevance, appropriateness, and coverage of the questionnaire items in relation to the theoretical framework and the constructs under investigation. Based on their comments and recommendations, the necessary modifications were made to the wording, organization, and content of the questionnaire The internal consistency of the questionnaire items was further examined by calculating Pearson correlation coefficients between each item and its corresponding construct or dimension. The results showed that all item correlations were positive and statistically significant at the 0.05 level, with significance values of 0.000. For the independent variable, the item correlations with their respective dimensions ranged from 0.562 to 0.965. For the dependent variable, which is treated as a single latent construct, the item correlations ranged from 0.636 to 0.912. These results provide evidence that the items are consistently associated with the constructs they were designed to measure and support their inclusion in the subsequent statistical analysis.

Table3, Item–Dimension Correlations

Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations								
Transparency			Accountability			Oversight and Supervision		
#	Correlation	Sig.	#	Correlation	Sig.	#	Correlation	Sig.
1	**0.953	0.000	7	**0.591	0.000	13	**0.772	0.000
2	**0.950	0.000	8	**0.676	0.000	14	**0.746	0.000
3	**0.938	0.000	9	**0.562	0.000	15	**0.836	0.000
4	**0.965	0.000	10	**0.701	0.000	16	**0.782	0.000
5	**0.898	0.000	11	**0.721	0.000	17	**0.725	0.000
6	**0.894	0.000	12	**0.644	0.000	18	**0.814	0.000
0.698**			0.524**			0.634**		
Authorities and Responsibilities			Risk Management			Human Oversight and Review		
#	Correlation	Sig.	#	Correlation	Sig.	#	Correlation	Sig.
19	**0.870	0.000	25	**0.846	0.000	31	**0.613	0.000
20	**0.912	0.000	26	**0.844	0.000	32	**0.661	0.000
21	**0.787	0.000	27	**0.925	0.000	33	**0.925	0.000
22	**0.870	0.000	28	**0.851	0.000	34	**0.902	0.000
23	**0.896	0.000	29	**0.844	0.000	35	**0.934	0.000
24	**0.801	0.000	30	**0.787	0.000	36	**0.886	0.000
0.852**			0.903**			0.824**		
Compliance with International Humanitarian Law								
#	Correlation	Sig.	#	Correlation	Sig.	#	Correlation	Sig.
1	**0.893	0.000	7	**0.864	0.000	13	**0.864	0.000
2	**0.905	0.000	8	**0.818	0.000	14	**0.636	0.000
3	**0.774	0.000	9	**0.912	0.000	15	**0.886	0.000
4	**0.888	0.000	10	**0.899	0.000			
5	**0.881	0.000	11	**0.736	0.000			
6	**0.775	0.000	12	**0.791	0.000			

3.6 Scale Reliability

The reliability of the questionnaire was assessed using Cronbach's Alpha coefficient to determine the internal consistency of the items measuring the study variables. A Cronbach's Alpha coefficient of 0.70 or higher was considered indicative of acceptable internal consistency. The results showed that Cronbach's Alpha was 0.952 for Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations and 0.969 for Compliance with International Humanitarian Law. The overall reliability coefficient for the questionnaire was 0.974 across the 51 items.

These results indicate a high level of internal consistency for both study variables and for the questionnaire as a whole, supporting the reliability of the instrument for the subsequent statistical analyses.

Table4, Reliability of the Questionnaire

Variable	**Cronbach's Alpha**	**N. of Items**
Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations	0.952	36
Compliance with International Humanitarian Law	0.969	15
Questionnaire as a Whole	0.974	51

3.7 Statistical Treatments Used in the Study

The collected data were coded, entered, cleaned, and analyzed using SPSS version 26 Frequencies and percentages described respondents' demographic and professional characteristics, while means, standard deviations, and relative weights assessed the study variables and independent-variable dimensions

Pearson's correlation coefficient examined the direction and strength of the relationship between Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations and Compliance with International Humanitarian Law Simple linear regression tested the direct effect of the independent variable on the dependent variable using the regression coefficient, R^2, t-value, F-value, and significance level Additional regression analysis assessed the contributions of the six dimensions of the independent variable to IHL compliance.

Independent-samples t-tests and one-way ANOVA examined differences across demographic and professional characteristics, with post-hoc tests used where appropriate The data were also checked for missing values, outliers, and relevant statistical assumptions The significance level was set at $\alpha = 0.05$.

4. Results

4.1 Respondents' Characteristics

The results show that the study sample, consisting of 294 respondents, had diverse demographic and professional characteristics. Males represented the larger proportion of the sample (63.6%), compared with 36.4% females. Regarding age, the largest group was 30–39 years (35.7%), followed by respondents aged under 30 years and 40–49 years, each accounting for 25.9%. Concerning educational qualification, Bachelor's degree holders represented the largest group (51.0%), followed by Master's degree holders (30.3%) and Doctoral degree holders (18.7%). Regarding professional experience, respondents with less than 5 years of practice accounted for 33.3%, closely followed by those with 5–10 years (33.0%). Those with 11–15 years represented 17.3%, while those with more than 15 years accounted for 16.3%. In terms of legal practice area, Civil Law represented the largest category (29.6%), followed by Criminal Law (24.8%), International Law (17.7%), Human Rights (17.0%), and Other Legal Fields (10.9%). Regarding knowledge of International Humanitarian Law, the largest proportion reported a moderate level (34.4%), followed by a high level (30.3%) and a very high level (16.7%), while 13.3% reported limited knowledge and 5.4% very limited knowledge.

Table5, Distribution of Respondents According to Demographic and Professional Characteristics

Variable	Category	Frequency	Percentage
Gender	Male	187	63.6%
	Female	107	36.4%
Age Group	Less than 30 years	76	25.9%
	30–39 years	105	35.7%
	40–49 years	76	25.9%
	50 years and above	37	12.6%
Educational Qualification	Bachelor's	150	51.0%
	Master's	89	30.3%
	Doctorate	55	18.7%
Years of Professional Practice	Less than 5 years	98	33.3%
	5–10 years	97	33.0%
	11–15 years	51	17.3%
	More than 15 years	48	16.3%

Variable	Category	Frequency	Percentage
Area of Legal Practice	International Law	52	17.7%
	Criminal Law	73	24.8%
	Civil Law	87	29.6%
	Human Rights	50	17.0%
	Other Legal Fields	32	10.9%
Knowledge of IHL	Very Limited	16	5.4%
	Limited	39	13.3%
	Moderate	101	34.4%
	High	89	30.3%
	Very High	49	16.7%
Total		294	100.0%

4.2 Answers to the Study Questions

1 What is the level of administrative governance and legal accountability governing the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip? To answer the first study question, arithmetic means, standard deviations, and relative weights were calculated for the overall variable and its dimensions to determine the level of Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations from the perspective of practicing lawyers in the Gaza Strip and rank its dimensions by mean.

Table6, Descriptive Statistics of Administrative Governance Dimensions

	Mean	Std. Deviation	%	Rank
Transparency	4.38	0.62	87.64%	2
Accountability	4.42	0.49	88.47%	1
Oversight and Supervision	4.30	0.49	85.90%	3
Authorities and Responsibilities	4.24	0.57	84.78%	4
Risk Management	3.93	0.57	78.63%	5
Human Oversight and Review	3.93	0.64	78.50%	6
Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations	4.20	0.39	83.98%	-

The table 6 shows that the overall level of **Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations** was **high**, with a mean of **4.20**, a standard deviation of **0.39**, and a relative weight of **83.98%**. At the dimension level, **Accountability** ranked first, with a mean of **4.42** and a relative weight of **88.47%**, followed by **Transparency**, with a mean of **4.38** and a relative weight of **87.64%**. **Oversight and Supervision** ranked third, with a mean of **4.30** and a relative weight of **85.90%**, followed by **Authorities and Responsibilities**, with a mean of **4.24** and a relative weight of **84.78%**. **Risk Management** ranked fifth, with a mean of **3.93** and a relative weight of **78.63%**, while **Human Oversight and Review** ranked sixth, with a mean of **3.93** and a relative weight of **78.50%**.

2. What is the level of compliance with international humanitarian law in the use of artificial intelligence in military operations from the perspective of practicing lawyers in the Gaza Strip?

To answer the second study question, arithmetic means, standard deviations, and relative weights were calculated for the overall variable and its dimensions to determine the level of Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations from the perspective of practicing lawyers in the Gaza Strip.

Table 7, Descriptive Statistics of Compliance with International Humanitarian Law

	Mean	Std. Deviation	%
Compliance with International Humanitarian Law	3.70	0.46	74.07%

The table shows that the level of **Compliance with International Humanitarian Law** was **high**, with a mean of **3.70**, a standard deviation of **0.46**, and a relative weight of **74.07%**.

Testing the Study Hypotheses

1. Is there a statistically significant effect of administrative governance and legal accountability in the use of artificial intelligence in military operations on compliance with international humanitarian law?

To test the first hypothesis, a regression analysis was conducted to examine the statistically significant effect of **Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations** on **Compliance with International Humanitarian Law**.

Table 8, Regression Analysis of the Effect of Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations on Compliance with International Humanitarian Law

Independent Variable	B	β	t	Sig.
Constant	1.557		5.959	0.000
Administrative Governance and Legal Accountability	0.511	0.435	8.249	0.000
	R	R^2	Adjusted R^2	F
	0.435	0.189	0.186	68.054

The table 8 indicated a statistically significant positive effect of Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations on Compliance with International Humanitarian Law. The correlation coefficient was R=0.435R = 0.435, while the coefficient of determination was R2=0.189R^2 = 0.189, indicating that Administrative Governance and Legal Accountability explained 18.9% of the variance in Compliance with International Humanitarian Law. The standardized regression coefficient was β=0.435\beta = 0.435, and the t-value was 8.249 at a significance level of p=0.000p = 0.000, indicating a statistically significant effect. Accordingly, the results showed that Administrative Governance and Legal Accountability had a statistically significant positive effect on Compliance with International Humanitarian Law. To further examine the nature of this effect, the dimensions of Administrative Governance and Legal Accountability were subsequently analyzed separately to identify which dimension had the strongest statistically significant effect on Compliance with International Humanitarian Law.

Table 9, Results of Stepwise Regression Analysis of the Dimensions of Administrative Governance and Legal Accountability on Compliance with International Humanitarian Law

Predictors	B	β	t	Sig.	Std. Error
Authorities and Responsibilities	0.271	0.339	5.079	0.000	0.053

Human Oversight and Review	0.139	0.194	3.058	0.002	0.045
Oversight and Supervision	0.106	0.133	2.414	0.016	0.044
Constant	1.643		8.534	0.000	0.192

The results showed that **Authorities and Responsibilities** had the strongest statistically significant positive effect on Compliance with International Humanitarian Law, with (B = 0.271), (\beta = 0.339), (t = 5.079), and (p = 0.000). **Human Oversight and Review** also had a statistically significant positive effect, with (B = 0.139), (\beta = 0.194), (t = 3.058), and (p = 0.002). Similarly, **Oversight and Supervision** had a statistically significant positive effect, with (B = 0.106), (\beta = 0.133), (t = 2.414), and (p = 0.016). Based on the standardized regression coefficients, Authorities and Responsibilities made the strongest contribution to Compliance with International Humanitarian Law, followed by Human Oversight and Review and Oversight and Supervision. The constant was statistically significant, with (B = 1.643), (t = 8.534), and (p = 0.000).

2. Are there statistically significant differences in respondents' perceptions of administrative governance and legal accountability for the use of artificial intelligence in military operations and compliance with international humanitarian law according to demographic and professional variables, including gender, age group, educational qualification, years of professional practice, area of legal practice, and knowledge of international humanitarian law?

To test this hypothesis, an Independent Samples t-test was used to examine differences according to gender, while One-Way Analysis of Variance (ANOVA) was used to examine differences according to age group, educational qualification, years of professional practice in law, area of legal practice, and level of knowledge of International Humanitarian Law. The hypothesis was assessed at a significance level of 0.05.

Table 10, Results of Testing Differences in Respondents' Perceptions According to Demographic and Professional Variables

Demographic Variable	Test	Statistic	Sig.
Gender	Independent Samples t-test	-0.794	0.428
Age Group	One-Way ANOVA	0.404	0.750
Educational Qualification	One-Way ANOVA	0.203	0.816
Years of Professional Practice in Law	One-Way ANOVA	0.234	0.872
Area of Legal Practice	One-Way ANOVA	0.902	0.463
Level of Knowledge of International Humanitarian Law	One-Way ANOVA	0.962	0.429

The results showed that there were no statistically significant differences in respondents' perceptions of the level of Administrative Governance and Legal Accountability and Compliance with International Humanitarian Law attributable to any of the examined demographic and professional variables. Specifically, the difference according to gender was not statistically significant, as the t-value was −0.794-0.794 with p=0.428p = 0.428. Similarly, no statistically significant differences were found according to age group (F=0.404,p=0.750F = 0.404, p = 0.750), educational qualification (F=0.203,p=0.816F = 0.203, p = 0.816), years of professional practice in law (F=0.234,p=0.872F = 0.234, p = 0.872), area of legal practice (F=0.902,p=0.463F = 0.902, p = 0.463), or level of knowledge of International Humanitarian Law (F=0.962,p=0.429F = 0.962, p = 0.429). Since all significance values were greater than 0.05, the results did not support the existence of statistically significant differences

attributable to these variables. Accordingly, the hypothesis proposing statistically significant differences was not supported.

1. Discussion

The study revealed a clear positive relationship between Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations and Compliance with International Humanitarian Law (IHL) Overall, respondents reported high levels of administrative governance, legal accountability, and IHL compliance No statistically significant differences were found according to gender, age, educational qualification, years of professional practice, area of legal practice, or level of IHL knowledge, indicating relatively consistent professional perceptions across the participating lawyers.

1. The level of Administrative Governance and Legal Accountability was high, with an overall mean of 4.20 out of 5, a standard deviation of 0.39, and a relative weight of 83.98% Accountability ranked first (M = 4.42), followed by Transparency (M = 4.38) and Oversight and Supervision (M = 4.30) These findings emphasize the importance of responsibility, transparency, information availability, and institutional supervision in governing AI-enabled military operations, consistent with Bode and Chandler (2026) and Cotino Hueso and Gómez de Ágreda (2024).
2. Risk Management and Human Oversight and Review recorded comparatively lower, although still high, means (M = 3.93 each) This suggests that continuous risk assessment, human review, verification, and intervention require further emphasis, particularly given the risks associated with algorithmic bias, technical errors, data limitations, and changing operational conditions (Bruun & Bo, 2025; Bode & Chandler, 2026).
3. Compliance with IHL was also high, with a mean of 3.70, a standard deviation of 0.46, and a relative weight of 74.07% IHL compliance was treated as one overall construct measured through 15 items, while distinction, proportionality, precautions in attack, and protection of civilians and civilian objects provided the substantive legal basis for the items rather than separate statistical dimensions.
4. The study found a statistically significant positive effect of Administrative Governance and Legal Accountability on IHL Compliance ($\beta = 0.435$, $t = 8.249$, $p < .001$, $R^2 = 0.189$) Thus, the governance and accountability construct statistically explained 18.9% of the variance in perceived IHL compliance, supporting the view that AI-related legal compliance is associated with governance, accountability, oversight, risk management, and human control (Bode & Chandler, 2026; Cotino Hueso & Gómez de Ágreda, 2024).
5. Stepwise regression retained Authorities and Responsibilities, Human Oversight and Review, and Oversight and Supervision as significant predictors Authorities and Responsibilities had the strongest standardized coefficient ($\beta = 0.339$, $p < .001$), followed by Human Oversight and Review ($\beta = 0.194$, $p = .002$) and Oversight and Supervision ($\beta = 0.133$, $p = .016$) These results highlight the importance of clearly allocated authority, meaningful human review, and institutional supervision Given the stepwise procedure, the results represent statistical contributions rather than definitive evidence of causal superiority.
6. No statistically significant differences were found according to gender ($t = -0.794$, $p = .428$), age ($F = 0.404$, $p = .750$), educational qualification ($F = 0.203$, $p = .816$), years of professional practice ($F = 0.234$, $p = .872$), area of legal practice ($F = 0.902$, $p = .463$), or IHL knowledge ($F = 0.962$, $p = .429$) This indicates relatively consistent perceptions of governance, accountability, and IHL compliance among the participating lawyers.
7. The absence of significant differences suggests that these issues are perceived primarily as broad institutional and legal concerns rather than matters strongly differentiated by demographic or professional characteristics However, this finding is limited to the study

sample and should not be interpreted as evidence that such characteristics cannot influence perceptions in other populations or contexts.

8. AI was examined as a technological and operational context rather than as an independent or mediating variable Accordingly, the study focused on the governance and accountability mechanisms surrounding its military use, recognizing that its legal and humanitarian implications depend on how systems are designed, tested, validated, deployed, supervised, and reviewed (Grand-Clément, 2023).
9. In the context of the Gaza War (2023–2026), the study does not make predetermined legal judgments regarding the legality of specific military operations Rather, it examines practicing lawyers' perceptions of the institutional and legal mechanisms associated with AI-enabled military operations Therefore, the findings represent respondents' perceptions and statistical relationships rather than independent legal determinations concerning specific incidents.
10. The study contributes empirically to the literature by examining the relationship between AI governance and accountability and perceived IHL compliance from the perspective of practicing lawyers in the Gaza Strip The findings particularly emphasize clearly defined authorities and responsibilities, human oversight and review, and institutional supervision as important components of the broader governance framework.
11. The study has limitations Its findings are based on practicing lawyers in the Gaza Strip and therefore reflect a specific professional and conflict context They should not automatically be generalized to military personnel, AI developers, policymakers, or legal professionals in other jurisdictions Moreover, the study relies on questionnaire responses and does not provide access to classified military information, operational AI systems, targeting databases, or internal decision-making records Accordingly, the findings concern perceived governance, accountability, and IHL compliance rather than independent determinations of the actual legality of specific military operations.

Proposed Applied Framework

To make the findings of this study more applicable to practice, the study proposes the development of an integrated **Administrative Governance and Legal Accountability Framework for the Use of Artificial Intelligence in Military Operations**. The proposed framework is designed to strengthen the institutional and legal mechanisms governing AI-enabled military operations and to support compliance with applicable international humanitarian law. It is based on the six dimensions examined in this study: **Transparency, Accountability, Oversight and Supervision, Authorities and Responsibilities, Risk Management, and Human Oversight and Review**.

The proposed framework should begin with clear institutional rules governing the development, acquisition, testing, deployment, and use of artificial intelligence in military operations. Each AI-enabled system should have a clearly defined purpose, scope of application, operational limitations, and designated institutional responsibilities. Such arrangements would reduce uncertainty regarding who is responsible for approving, operating, monitoring, reviewing, and, where necessary, suspending the use of an AI-enabled system.

Particular attention should be given to **Authorities and Responsibilities**, which recorded the largest standardized regression coefficient among the dimensions retained in the additional stepwise regression model ($\beta = 0.339$, $p < 0.001$). This finding indicates that clear allocation of authority and responsibility is an important statistical component of the relationship examined in the study. Accordingly, the proposed framework should establish explicit lines of responsibility among commanders, operators, technical personnel, legal advisers, and other relevant actors involved in the AI life cycle.

The framework should also incorporate **Human Oversight and Review** and **Oversight and Supervision** as continuing institutional requirements. AI-generated outputs should support, rather than replace, human decision-making and established legal responsibilities. Human personnel responsible for consequential decisions should have sufficient information, expertise, authority, and opportunity to evaluate, question, modify, or reject AI-generated recommendations where appropriate.

In addition, **Risk Management** should be integrated throughout the AI life cycle. Risk assessment should address technical errors, data limitations, algorithmic bias, uncertainty, changes in operational circumstances, and potential failures of AI-enabled systems. Regular testing, validation, monitoring, and reassessment should therefore accompany the continued use of such systems.

The proposed framework should also include mechanisms for **transparency and traceability**. Appropriate records should be maintained regarding the system's purpose, capabilities, limitations, testing procedures, operational use, and relevant human decisions. Such documentation can contribute to accountability by making it possible to determine how an AI-supported recommendation was generated, how it was reviewed, and how the final decision was reached.

Finally, legal review should be integrated into the governance process. The use of AI in military operations should be assessed against applicable international humanitarian law, including the requirements reflected in the principles of **distinction, proportionality, precautions in attack, and protection of civilians and civilian objects**. These principles constitute the substantive legal basis reflected in the questionnaire items measuring Compliance with International Humanitarian Law; they are not treated as separate statistical dimensions in this study.

Future Research Prospects

The findings of this study open several directions for future research concerning the governance and legal accountability of artificial intelligence in military operations. One important direction is to examine how each governance mechanism contributes to the responsible use of AI across different stages of the AI life cycle, including development, testing, validation, deployment, operation, monitoring, and review.

Future studies could also examine **human oversight and review** in greater depth. Although this dimension recorded a high level in the present study, its mean was lower than those of accountability, transparency, oversight and supervision, and authorities and responsibilities. Further research could therefore investigate the practical conditions required for meaningful human oversight, including the availability of information, the competence of decision-makers, the time available for review, and the authority to intervene in AI-supported decisions.

Another important direction concerns **risk management**. Future research could examine how military institutions identify, assess, document, and mitigate risks associated with AI-enabled systems. Particular attention could be given to algorithmic bias, inaccurate outputs, uncertainty, data quality, system failures, and changes in operational environments.

Future research could also investigate the relationship between AI-enabled military decision support and the substantive requirements of international humanitarian law. Such research could examine how AI systems are designed and used in ways that support the practical application of distinction, proportionality, precautions in attack, and protection of civilians and civilian objects. This would contribute to a more detailed understanding of the relationship between technological capabilities, institutional governance, and legal obligations.

Comparative studies could further examine the perceptions of practicing lawyers, military personnel, legal advisers, policymakers, AI specialists, and humanitarian practitioners. Such studies could determine whether professional background influences perceptions of administrative governance, legal accountability, and compliance with international humanitarian law.

Finally, future research could move beyond perception-based questionnaires by incorporating qualitative interviews, legal analysis, documented case studies, technical assessments, and analysis of institutional AI governance procedures. This would help distinguish between **perceived compliance** and independently assessed legal compliance and would provide a more comprehensive understanding of the practical implications of AI in military operations.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. **Establish an integrated AI governance framework**: Relevant institutions should develop clear administrative and legal procedures covering the development, acquisition, testing, deployment, operation, monitoring, and review of AI-enabled military systems.
2. **Clearly define authorities and responsibilities**: The roles and responsibilities of commanders, operators, technical personnel, legal advisers, and other relevant actors should be clearly specified, with defined lines of authority for approving, supervising, reviewing, modifying, suspending, or terminating AI systems.
3. **Strengthen human oversight and review**: AI-enabled systems should remain subject to meaningful human oversight, particularly when their outputs may affect persons or civilian objects Human decision-makers should retain the ability to question, modify, or reject AI-generated recommendations.
4. **Institutionalize continuous risk management**: Risk assessment should extend throughout the AI life cycle and regularly address technical errors, data limitations, algorithmic bias, uncertainty, system performance, and changes in operational conditions.
5. **Strengthen transparency and traceability**: Institutions should maintain appropriate records of AI design, testing, validation, deployment, and operational use to support traceability, reconstruction of relevant decisions, and identification of responsible actors where legally and operationally possible.
6. **Integrate legal review throughout the AI life cycle**: Legal review should be conducted before deployment and repeated following significant changes to AI systems, their data, capabilities, intended uses, or operational environments, with particular attention to applicable IHL requirements.
7. **Strengthen institutional oversight and supervision**: Continuous supervisory mechanisms should monitor the performance and lawful use of AI-enabled systems throughout their operational life rather than only at the authorization stage.
8. **Develop specialized interdisciplinary training**: Personnel involved in AI development, operation, supervision, and legal review should receive training covering AI capabilities and limitations, risk management, human oversight, accountability, and applicable IHL principles.
9. **Promote documentation and accountability mechanisms**: Institutions should document significant AI-supported decisions and associated human review to strengthen accountability and facilitate subsequent investigation, review, or legal assessment when required.
10. **Encourage further empirical research**: Future studies should examine AI governance and IHL compliance using broader professional populations, comparative and longitudinal designs, and mixed methods to strengthen evidence concerning the relationship between governance, legal accountability, and IHL compliance.

Conclusion

This study examined Administrative Governance and Legal Accountability for the Use of Artificial Intelligence in Military Operations and its relationship with Compliance with International Humanitarian Law, from the perspective of practicing lawyers in the Gaza Strip during the Gaza War (2023–2026).

The findings indicated a high perceived level of Administrative Governance and Legal Accountability, with a mean of 4.20 out of 5 and a relative weight of 83.98% Accountability ranked highest among the six dimensions, followed by Transparency, Oversight and Supervision, Authorities and Responsibilities, Risk Management, and Human Oversight and Review Compliance with International Humanitarian Law was also perceived at a relatively high level, with a mean of 3.70 and a relative weight of 74.07% It was measured as a single construct through 15 items based on the principles of distinction, proportionality, precautions in attack, and protection of civilians and civilian objects.

Regression analysis revealed a statistically significant positive relationship between Administrative Governance and Legal Accountability and IHL Compliance ($\beta = 0.435$, $t = 8.249$, $p < .001$), with the model explaining 18.9% of the variance in perceived IHL compliance Stepwise regression retained Authorities and Responsibilities, Human Oversight and Review, and Oversight and Supervision as significant predictors, with Authorities and Responsibilities showing the strongest contribution ($\beta = 0.339$, $p < .001$) No statistically significant differences were found according to gender, age, educational qualification, years of professional practice, area of legal practice, or level of IHL knowledge.

The findings indicate that AI governance in military operations is not solely a technological issue but also involves institutional responsibility, legal accountability, human oversight, risk management, transparency, and continuous supervision AI use does not replace the application of IHL; rather, it reinforces the need for appropriate legal and institutional safeguards However, the findings reflect the perceptions of practicing lawyers in the Gaza Strip and do not constitute independent legal determinations regarding specific military operations The study contributes empirical evidence to the emerging literature by emphasizing clear authorities and responsibilities, effective human oversight, institutional supervision, continuous risk management, transparency, and legal review as key components of responsible AI governance within the framework of IHL.

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ملحق الاستبانة

استبانة الدراسة

أولاً: البيانات العامة

يرجى وضع إشارة (✓) أمام الإجابة التي تنطبق عليك:

م	المتغير	الفئات
1	**الجنس**	☐ذكر ☐ أنثى
2	**الفئة العمرية**	☐أقل من 30 سنة ☐ 30–39 سنة ☐ 40–49 سنة ☐ 50 سنة فأكثر
3	**المؤهل العلمي**	☐بكالوريوس ☐ ماجستير ☐ دكتوراه
4	**سنوات الممارسة المهنية في مجال المحاماة**	☐أقل من 5 سنوات ☐ 5–10 سنوات ☐ 11–15 سنة ☐ أكثر من 15 سنة
5	**مجال الممارسة القانونية**	☐قانون دولي ☐ قانون جنائي ☐ قانون مدني ☐ حقوق إنسان ☐ مجالات قانونية أخرى
6	**مدى المعرفة بالقانون الدولي الإنساني**	☐محدودة جدًا ☐ محدودة ☐ متوسطة ☐ مرتفعة ☐ مرتفعة جدًا

ثانياً: المتغير المستقل

الحوكمة الإدارية والمساءلة القانونية لاستخدام الذكاء الاصطناعي في العمليات العسكرية

يرجى تحديد درجة موافقتك على العبارات التالية وفق المقياس:

= 1لا أوافق بشدة | 2 = لا أوافق | 3 = محايد | 4 = أوافق | 5 = أوافق بشدة

الرقم	العبارة
	البعد الأول: الشفافية
1	تتوافر معلومات واضحة حول الأغراض العسكرية التي يُستخدم فيها الذكاء الاصطناعي.
2	تكون قدرات أنظمة الذكاء الاصطناعي المستخدمة في العمليات العسكرية معروفة للجهات البشرية المخولة بالإشراف عليها.
3	تكون حدود وإمكانات أنظمة الذكاء الاصطناعي معروفة قبل استخدامها في العمليات العسكرية.
4	يتم توثيق إجراءات تطوير واختبار أنظمة الذكاء الاصطناعي المستخدمة عسكريًا.
5	تتوافر سجلات يمكن الرجوع إليها بشأن تشغيل أنظمة الذكاء الاصطناعي ونتائجها.
6	تتيح إجراءات التوثيق تتبع المعلومات والنتائج التي استندت إليها القرارات المدعومة بالذكاء الاصطناعي.
	البعد الثاني: المساءلة
7	توجد آليات واضحة لتحديد المسؤولية البشرية عن القرارات التي تستند إلى مخرجات الذكاء الاصطناعي.
8	يمكن تحديد الجهة المسؤولة عن اعتماد استخدام نظام الذكاء الاصطناعي في العمليات العسكرية.
9	تخضع القرارات المرتبطة باستخدام الذكاء الاصطناعي للمراجعة والمساءلة من الجهات المختصة.

10	توجد إجراءات واضحة للتعامل مع الأخطاء الناتجة عن أنظمة الذكاء الاصطناعي.
11	لا تُنقل المسؤولية القانونية عن القرارات العسكرية إلى نظام الذكاء الاصطناعي نفسه.
12	يمكن تحديد المسؤوليات القانونية للأشخاص والجهات المشاركة في تصميم واعتماد وتشغيل أنظمة الذكاء الاصطناعي.
البعد الثالث: الرقابة والإشراف	
13	تخضع أنظمة الذكاء الاصطناعي المستخدمة عسكريًا لإشراف بشري مستمر.
14	توجد جهات مختصة بمراقبة أداء أنظمة الذكاء الاصطناعي أثناء استخدامها.
15	يستطيع المسؤولون المختصون مراجعة مخرجات الذكاء الاصطناعي قبل اتخاذ القرارات العسكرية.
16	تتوافر آليات للتدخل البشري عند ظهور نتائج غير موثوقة أو غير متوقعة.
17	يمتلك المشرفون على أنظمة الذكاء الاصطناعي الصلاحية اللازمة لإيقاف استخدامها عند الضرورة.
18	تشمل الرقابة على أنظمة الذكاء الاصطناعي مراحل التطوير والاختبار والتشغيل والمراجعة اللاحقة.
البعد الرابع: السلطة والمسؤولية	
19	توجد صلاحيات محددة بوضوح للأشخاص المخولين باستخدام أنظمة الذكاء الاصطناعي العسكرية.
20	يتم تحديد المسؤوليات البشرية قبل اعتماد نظام الذكاء الاصطناعي للاستخدام العملياتي.
21	تكون صلاحية تعديل أو تعليق استخدام نظام الذكاء الاصطناعي محددة بوضوح.
22	توجد جهة محددة تتحمل المسؤولية عن اعتماد نظام الذكاء الاصطناعي وتشغيله.
23	تتناسب الصلاحيات الممنوحة للمستخدمين مع مستوى المسؤولية المترتبة على قراراتهم.
24	تكون أدوار القادة والمشغلين والخبراء التقنيين والمستشارين القانونيين محددة في استخدام أنظمة الذكاء الاصطناعي.
البعد الخامس: إدارة المخاطر	
25	يتم تحديد المخاطر المحتملة المرتبطة باستخدام الذكاء الاصطناعي قبل تشغيله عسكريًا.
26	تخضع أنظمة الذكاء الاصطناعي لاختبارات لتحديد الأخطاء والتحيزات المحتملة قبل استخدامها.
27	يتم تقييم مدى موثوقية البيانات المستخدمة في أنظمة الذكاء الاصطناعي.
28	يتم تقييم مخاطر اختلاف أداء النظام بين بيئة الاختبار والبيئة العملياتية الفعلية.
29	توجد إجراءات للتقليل من مخاطر الاعتماد غير المناسب على مخرجات الذكاء الاصطناعي.
30	تتم مراجعة مخاطر أنظمة الذكاء الاصطناعي بصورة دورية أثناء استخدامها.
البعد السادس: الإشراف والمراجعة البشرية	
31	يشارك العنصر البشري بصورة فعلية في القرارات التي تتأثر بمخرجات الذكاء الاصطناعي.
32	يتمكن المسؤول البشري من التحقق من مخرجات الذكاء الاصطناعي قبل الاعتماد عليها.
33	يمتلك المستخدمون المعرفة والتدريب الكافيين لفهم حدود أنظمة الذكاء الاصطناعي.
34	يستطيع المسؤول البشري رفض أو تجاوز توصيات الذكاء الاصطناعي عند وجود أسباب تستدعي ذلك.
35	تتم مراجعة القرارات المدعومة بالذكاء الاصطناعي بعد تنفيذها عند الحاجة.
36	تستمر المراجعة البشرية عند حدوث ظروف أو نتائج غير متوقعة أثناء استخدام النظام.

ثالثاً: المتغير التابع

الامتثال للقانون الدولي الإنساني

الرقم	العبارة
1	يتم التحقق من قدرة أنظمة الذكاء الاصطناعي على التمييز بين المدنيين والمقاتلين قبل استخدامها في العمليات العسكرية.
2	يتم التحقق من قدرة أنظمة الذكاء الاصطناعي على التمييز بين الأعيان المدنية والأهداف العسكرية.
3	تخضع مخرجات الذكاء الاصطناعي المتعلقة بتحديد الأهداف للتحقق والمراجعة البشرية قبل اتخاذ قرارات استخدام القوة.
4	تؤخذ احتمالات الخطأ أو عدم الدقة في تصنيف الأشخاص والأعيان في الاعتبار عند استخدام الذكاء الاصطناعي في العمليات العسكرية.
5	يتم تقييم الآثار المحتملة على المدنيين عند استخدام الذكاء الاصطناعي لدعم القرارات المتعلقة بالهجمات.
6	لا يُعتمد على مخرجات الذكاء الاصطناعي وحدها في تقدير الأضرار العرضية المحتملة على المدنيين.
7	تراعي القرارات المدعومة بالذكاء الاصطناعي العلاقة بين الضرر المتوقع على المدنيين والميزة العسكرية المتوقعة.
8	يتم إجراء تقييم بشري للسياق والظروف المحيطة قبل اتخاذ القرارات المتعلقة باستخدام القوة.
9	يتم اتخاذ الاحتياطات الممكنة لتجنب أو تقليل الأضرار التي قد تلحق بالمدنيين أثناء العمليات العسكرية المدعومة بالذكاء الاصطناعي.
10	تخضع أنظمة الذكاء الاصطناعي للاختبار والتحقق من صلاحيتها قبل استخدامها في العمليات التي قد تؤثر في المدنيين.
11	تؤخذ القيود الفنية ومصادر الخطأ المحتملة في أنظمة الذكاء الاصطناعي في الاعتبار عند اختيار وسائل وأساليب الهجوم.
12	يمكن تعديل أو إيقاف استخدام نظام الذكاء الاصطناعي عندما تظهر مؤشرات على عدم موثوقية مخرجاته.
13	تُعطى حماية المدنيين والأعيان المدنية اعتبارًا أساسيًا عند استخدام الذكاء الاصطناعي في العمليات العسكرية.
14	تتم مراجعة القرارات المدعومة بالذكاء الاصطناعي عندما يكون من المحتمل أن تؤثر في المدنيين أو الأعيان المدنية.
15	تسهم الرقابة والمراجعة البشرية في تعزيز الالتزام بقواعد القانون الدولي الإنساني عند استخدام الذكاء الاصطناعي في العمليات العسكرية.