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Factors Influencing Compliance on Search and Rescue Protocols Among Philippine Coast Guard Personnel: Inputs for Procedural Improvement

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ABSTRACT

This study examined the factors influencing compliance with search and rescue (SAR) protocols among Philippine Coast Guard (PCG) personnel and generated inputs for procedural improvement. Anchored on the Theory of Planned Behavior, Policy Implementation Theory, and Organizational Culture Theory, the study used a correlational research design and a structured survey questionnaire administered to PCG personnel across operational ranks. Data were analyzed using frequency and percentage distribution, weighted mean, standard deviation, and multivariate multiple regression analysis. Findings revealed that personnel demonstrated strong compliance with SAR protocols in terms of adherence to procedural guidelines (M = 3.60), response time (M = 3.68), and operational accuracy (M = 3.50). Individual factors, particularly attitude and perceived behavioral control, significantly influenced compliance, while organizational factors such as communication channels and clarity of protocols affected procedural adherence and operational accuracy. Organizational culture also played an important role, with shared values and norms strongly supporting response performance, although communication barriers and resistance to change remained cultural concerns. The study concludes that compliance with SAR protocols is shaped by the combined influence of individual readiness, organizational support, and cultural adaptability. Procedural improvements should include mandatory pre-mission briefings, advanced simulation-based training, improved verification practices, stronger inter-agency coordination, upgraded communication systems, and culture-building initiatives that promote accountability, openness, and continuous improvement.

Keywords: *Philippine Coast Guard, search and rescue protocols, compliance, organizational culture, procedural improvement, maritime safety*

INTRODUCTION

The Philippine Coast Guard (PCG) is a key maritime agency responsible for safeguarding lives, securing maritime spaces, and responding to emergencies across the country's archipelagic waters. Search and rescue (SAR) operations are among its most critical functions because the Philippines faces frequent maritime risks associated with typhoons, sea travel, fishing activities, and the movement of people and goods across more than 7,000 islands. In this context, compliance with SAR protocols is not merely a procedural requirement but an operational necessity that directly affects rescue speed, coordination, and mission success.

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SAR protocols provide standardized procedures for mobilization, communication, coordination, documentation, and operational execution. Strict compliance reduces errors, prevents duplication of effort, strengthens inter-agency collaboration, and improves the likelihood of saving lives. However, compliance may be affected by several factors, including personnel attitudes, confidence, training, resource availability, communication systems, organizational culture, and the clarity of operational guidelines. These factors become more significant in complex maritime settings where emergencies often require rapid decisions under pressure.

Although the PCG has established procedures for maritime emergencies, gaps in protocol review, verification, manpower allocation, training specialization, and communication reliability may limit operational effectiveness. Understanding these factors is important because procedural improvement must be grounded not only in technical requirements but also in the human, organizational, and cultural realities of SAR personnel. Therefore, this study analyzed the level of compliance with SAR protocols among PCG personnel, examined individual, organizational, and cultural factors that influence compliance, identified implementation gaps, and proposed evidence-based inputs for procedural improvement.

Figure 1. *Research Paradigm of the Study*

Input	Process	Output
Level of compliance - Procedural adherence - Response time - Operational accuracy Individual factors - Attitudes - Subjective norms - Perceived behavioral control Organizational factors - Protocol clarity - Resources - Inter-agency coordination - Communication Cultural factors - Shared values - Cultural barriers	Assessment of compliance behavior Evaluation of policy implementation Examination of organizational culture Integration and analysis of relationships among variables	Key factors influencing compliance Identified implementation gaps Procedural improvement inputs for stronger SAR operations

The paradigm shows the relationship among individual, organizational, and cultural inputs, the analytical process, and the procedural improvement outputs of the study.

Literature Review

Compliance in maritime search and rescue operations

Compliance with SAR protocols is essential in maritime rescue operations because it supports rapid mobilization, standardizes procedures, and improves coordination among responders. Internationally recognized guidelines, such as the IAMSAR Manual, promote uniformity in rescue planning and response, reducing the risk of delays and operational errors. In countries with complex maritime geography, adherence to established protocols becomes even more important because responders must coordinate across multiple islands, agencies, and communication systems (IMO, 2019; Joseph & Dalaklis, 2021; Pessôa et al., 2023).

Non-compliance can result in miscommunication, delayed deployment, duplication of tasks, and reduced rescue effectiveness. Studies on maritime operations emphasize that personnel training, resource

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sufficiency, communication reliability, and clear role assignment are necessary to ensure that protocols are consistently implemented during emergencies (Kim, 2020; Cucharo, 2022).

Theoretical foundations of compliance

The Theory of Planned Behavior explains compliance as a function of attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). In SAR operations, personnel are more likely to comply when they believe protocols are important, when peers and superiors reinforce compliance, and when they feel capable of following procedures despite pressure and operational constraints.

Policy Implementation Theory emphasizes that policies are effectively executed when goals are clear, resources are adequate, communication is consistent, and stakeholders understand their roles (Mazmanian & Sabatier, 1983; Hill & Hupe, 2014). Applied to SAR operations, this theory highlights the importance of clear protocols, updated manuals, sufficient equipment, and coordinated implementation.

Organizational Culture Theory explains how shared values, norms, and assumptions shape behavior within an organization (Schein, 1992). A culture that values safety, accountability, ethical conduct, and mission excellence encourages personnel to comply with protocols. Conversely, resistance to change, complacency, and hierarchical barriers can weaken adherence.

Individual, organizational, and cultural factors

Individual factors include attitudes toward SAR protocols, perceived expectations from peers and superiors, and confidence in one's ability to comply. Previous compliance studies show that positive attitudes and high self-efficacy are associated with stronger adherence to safety protocols (Quah et al., 2018; Yuen et al., 2019; Hagger et al., 2022).

Organizational factors include protocol clarity, resource availability, inter-agency coordination, and communication channels. These determine whether personnel can translate guidelines into action during actual operations. Clear communication and reliable resources support timely decisions, while ambiguity and coordination problems can weaken implementation (Xue et al., 2022; Kaneko, 2023).

Cultural factors include shared values and norms as well as potential barriers such as resistance to change, communication gaps, and hierarchical constraints. A strong safety culture increases accountability and consistency, but cultural barriers must be addressed through leadership, open communication, and continuous training (Andriessen & Zwetsloot, 2020; Lawal et al., 2024).

METHODS

Research Design

The study employed a correlational research design to examine the relationships among individual, organizational, and cultural factors and compliance with SAR protocols. This design was appropriate because the study did not manipulate variables but analyzed the strength and direction of relationships among factors affecting protocol adherence.

Respondents and Sampling

The respondents were Philippine Coast Guard personnel directly involved in SAR operations. They were categorized into Non-Officers (Junior ranks from Apprentice Seaman to Seaman 1st Class), Non-Officers (Senior ranks from Petty Officer 3rd Class to Chief Petty Officer), and Officers. Stratified random sampling was used to ensure proportional representation across rank categories and to capture perspectives from different operational levels.

Research Instrument

A structured survey questionnaire was used to gather data. The instrument contained sections on compliance with SAR protocols, individual factors, organizational factors, organizational culture, and challenges in implementation. Responses were measured using a four-point Likert scale interpreted as Not

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Compliant, Less Compliant, Compliant, and Highly Compliant. The instrument was validated by experts in maritime operations, organizational behavior, and research methodology. Reliability was tested through a pilot study using Cronbach's alpha, with acceptable internal consistency reported for all constructs.

Data Gathering Procedure

The researcher secured the necessary permissions from relevant PCG authorities before data collection. The questionnaire was administered through face-to-face distribution and online platforms, depending on respondent availability and operational assignment. Participation was voluntary, and respondents were assured of anonymity and confidentiality. Completed responses were reviewed, encoded, and prepared for statistical analysis.

Data Analysis

Frequency and percentage distribution were used to summarize respondent profiles. Weighted mean and standard deviation were used to describe the level of compliance and the extent of individual, organizational, and cultural factors. Multivariate multiple regression analysis was used to determine whether individual, organizational, and cultural factors significantly predicted compliance with SAR protocols in terms of procedural adherence, response time, and operational accuracy.

Ethical Considerations

The study observed informed consent, voluntary participation, confidentiality, anonymity, non-coercion, and responsible use of data. Respondents were informed of the purpose of the study and their right to withdraw without penalty. Data were used only for academic purposes and were presented in aggregated form.

RESULTS AND DISCUSSION

Level of Compliance with SAR Protocols

The respondents demonstrated a high level of compliance across the three dimensions of SAR protocol implementation. Procedural adherence obtained an overall mean of 3.60, response time obtained 3.68, and operational accuracy obtained 3.50, all interpreted as Strongly Agree or highly compliant. These findings show that PCG personnel generally follow SAR protocols, respond quickly, and perform operational tasks accurately. However, the relatively lower score in pre-mission protocol review and information verification indicates the need to strengthen preparation and validation procedures before and during SAR missions.

Table 1. *Summary of Compliance with SAR Protocols*

Compliance Dimension	Overall Mean	Standard Deviation	Interpretation
Adherence to procedural guidelines	3.60	0.37	Strongly Agree
Response time	3.68	0.48	Strongly Agree
Operational accuracy	3.50	0.42	Strongly Agree

The strong compliance level reflects personnel commitment to SAR responsibilities. This supports the view that standardized SAR procedures improve coordination, response time, and mission reliability (IMO, 2019; Joseph & Dalaklis, 2021). Nevertheless, strict compliance must be sustained through continuous review, updated manuals, verification routines, and mission debriefing systems.

Individual Factors Influencing Compliance

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Individual factors were generally rated highly. Attitude recorded an overall mean of 3.63, subjective norms recorded 3.44, and perceived behavioral control recorded 3.68. These findings suggest that personnel hold positive views toward SAR protocols, recognize workplace expectations for compliance, and feel capable of following procedures during operations.

Table 2. *Summary of Individual Factors*

Individual Factor	Overall Mean	Standard Deviation	Interpretation
Attitudes	3.63	0.59	Strongly Agree
Subjective norms	3.44	0.42	Strongly Agree
Perceived behavioral control	3.68	0.48	Strongly Agree

The results align with the Theory of Planned Behavior, which explains that compliance is shaped by beliefs, social expectations, and perceived ability (Ajzen, 1991). The relatively lower result for direct social pressure indicates that personnel may comply more because of internal commitment and professional norms than coercion. Training programs should therefore reinforce both personal responsibility and the life-saving consequences of strict protocol adherence.

Organizational Factors Affecting SAR Protocol Implementation

Organizational factors were also rated strongly. Resource availability received the highest mean (3.77), followed by communication channels (3.67), clarity of protocols (3.63), and inter-agency coordination (3.41). These findings show that personnel generally perceive the organization as supportive of SAR implementation, although inter-agency coordination remains the weakest organizational dimension.

Table 3. *Summary of Organizational Factors*

Organizational Factor	Overall Mean	Standard Deviation	Interpretation
Clarity of protocols	3.63	0.67	Strongly Agree
Resource availability	3.77	0.47	Strongly Agree
Inter-agency coordination	3.41	0.47	Strongly Agree
Communication channels	3.67	0.43	Strongly Agree

The results emphasize that protocol clarity, tools, manpower, communication, and coordination mechanisms affect how policies are translated into actual operations. Although resources were generally perceived as sufficient, manpower and multi-agency alignment require attention. This finding is consistent with policy implementation literature showing that clear procedures, adequate resources, stakeholder engagement, and communication systems are necessary for effective execution (Mazmanian & Sabatier, 1983; Hill & Hupe, 2014).

Organizational Culture and Compliance

The organizational culture of the PCG strongly supported compliance. Shared values and norms obtained an overall mean of 3.87, indicating strong collective commitment to excellence, safety, accountability, mission success, and ethical conduct. However, potential cultural barriers also obtained a mean of 3.50, suggesting that communication barriers, complacency, resistance to change, and tensions between traditional practices and modern protocols remain relevant concerns.

Table 4. *Summary of Organizational Culture Factors*

Cultural Factor	Overall Mean	Standard Deviation	Interpretation
Shared values and norms	3.87	0.31	Strongly Agree
Potential cultural barriers	3.50	0.61	Strongly Agree

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A strong culture of safety and accountability reinforces adherence to protocols. However, cultural barriers can affect communication and openness, particularly in hierarchical organizations. The findings support the need for a culture that preserves discipline while promoting feedback, adaptability, and continuous improvement (Schein, 1992; Andriessen & Zwetsloot, 2020).

Challenges and Gaps in SAR Protocol Implementation

The study identified specific gaps in resource allocation, training adequacy, and communication systems. Resource allocation challenges were generally not perceived as severe (M = 2.17, Disagree), suggesting that personnel did not strongly view resources as a barrier. Training adequacy was rated highly (M = 3.70), but the need for more advanced and specialized training remained evident. Communication systems were also rated highly (M = 3.80), although respondents recognized occasional technical issues and the need for infrastructure improvements.

Table 5. *Summary of Implementation Gaps*

Gap Area	Overall Mean	Standard Deviation	Interpretation
Resource allocation challenges	2.17	0.39	Disagree
Training adequacy	3.70	0.58	Strongly Agree
Communication systems	3.80	0.39	Strongly Agree

The findings imply that the PCG has generally functional resources, training, and communication systems; however, procedural improvement should focus on advanced preparedness rather than basic compliance. Simulation-based training, predictive resource planning, and communication redundancy can help the organization prepare for complex and high-pressure missions.

Predictors of Compliance with SAR Protocols

Regression analysis revealed that the predictors of compliance varied across dimensions. For adherence to procedural guidelines, attitudes, perceived behavioral control, communication channels, clarity of protocols, and potential cultural barriers showed significant relationships. For response time, shared values and norms and potential cultural barriers were significant predictors, while communication channels had a marginal influence. For operational accuracy, attitudes and subjective norms were significant predictors, while clarity of protocols, inter-agency coordination, and communication channels also showed influence.

Table 6. *Significant Predictors of SAR Compliance Dimensions*

Compliance Dimension	Significant or Notable Predictors	Key Implication
Procedural adherence	Attitudes; perceived behavioral control; communication channels; clarity of protocols; potential cultural barriers	Personnel commitment, confidence, clear protocols, and communication systems support adherence.
Response time	Shared values and norms; potential cultural barriers; communication channels	A cohesive culture and reliable communication influence timely response.
Operational accuracy	Attitudes; subjective norms; clarity of protocols; inter-agency coordination; communication channels	Positive mindset, clear procedures, balanced peer expectations, and coordination improve accuracy.

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These findings confirm that compliance is multidimensional. It is not determined by one factor alone but by the interaction of individual readiness, organizational systems, and cultural conditions. This supports the need for procedural improvement that simultaneously strengthens personnel competence, institutional systems, and organizational culture.

Proposed Procedural Improvement Inputs

Based on the findings, the study proposes several procedural improvements: mandatory pre-mission briefings and checklists; updated digital protocol manuals; advanced simulation-based training; verification steps for critical instructions; regular audits and debriefings; training on stress management and decision-making; improved access to updated protocols; strategic workforce planning; stronger inter-agency coordination through joint exercises; advanced communication technologies; and culture-building programs that encourage open communication, accountability, and adaptability.

CONCLUSION

The study concludes that Philippine Coast Guard personnel demonstrate a strong level of compliance with search and rescue protocols. Their high ratings in procedural adherence, response time, and operational accuracy indicate that SAR personnel generally perform their duties within established operational standards. However, the findings also reveal specific areas requiring improvement, particularly pre-mission protocol review, verification of information and instructions, individual response readiness, and reinforcement of operational accuracy.

The results further show that compliance is influenced by the combined effects of individual, organizational, and cultural factors. Positive attitudes, perceived behavioral control, reliable communication channels, clear protocols, shared values, and cultural adaptability all contribute to protocol adherence. Meanwhile, communication barriers, resistance to change, and coordination issues can weaken implementation if not addressed. Therefore, improving SAR compliance requires a holistic approach that strengthens personnel readiness, organizational systems, and institutional culture at the same time.

Overall, the study affirms that procedural improvement in SAR operations should not focus only on written protocols. It must also enhance training, communication, coordination, verification, resource planning, and cultural alignment. By addressing these areas, the PCG can further improve operational efficiency, reduce risk during missions, and strengthen its capacity to protect lives and maritime communities.

Recommendation

First, the PCG should institutionalize mandatory pre-mission briefings and standardized checklists to ensure that all personnel review SAR protocols, confirm assignments, and verify critical information before deployment.

Second, advanced simulation-based and scenario-based training should be strengthened to improve decision-making, adaptability, stress management, and operational accuracy during complex and unpredictable SAR missions.

Third, the organization should improve access to updated SAR materials through a centralized digital platform containing real-time protocol updates, operational manuals, checklists, and communication advisories.

Fourth, inter-agency coordination should be strengthened through formal collaboration agreements, shared communication platforms, regular joint exercises, and clear role delineation among responding agencies.

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Fifth, communication systems should be upgraded and regularly tested to minimize breakdowns during missions. Redundant communication channels and real-time data-sharing tools should be integrated into SAR operations.

Finally, the PCG should promote an organizational culture that balances discipline with openness. Personnel should be encouraged to report concerns, recommend improvements, and participate in continuous learning activities that strengthen accountability, safety, and mission effectiveness.

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