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Article

Operational Capabilities in Disaster Emergency Management of Bureau of Fire Protection Personnel in Camarines Norte, Philippines

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ABSTRACT

This study assessed the operational capabilities of Bureau of Fire Protection (BFP) personnel in disaster emergency management in the Province of Camarines Norte, Philippines. Preliminary observations and institutional reports indicated several operational constraints that potentially affect the effectiveness of disaster response in the province. Among the most pressing concerns are the limited number of personnel assigned to several municipal fire stations, uneven manpower distribution across municipalities, constraints in the availability and readiness of firefighting and rescue equipment, and the irregular conduct of specialized disaster response and Incident Command System (ICS) trainings. The study assessed the operational capabilities of the Bureau of Fire Protection personnel in Camarines Norte for Disaster Emergency Management from 2024 to 2025. The study determined the profile of the respondents in terms of age, sex, civil status, educational attainment, length of service, and relevant training attended. Also, in terms of operational capabilities in disaster emergency management, it focused only on resource planning, organizational management, responsiveness, and information dissemination, which was crucial to personnel in terms of their level of knowledge at every level, using the researcher's structured research instrument. The method of data collection was an online survey to gather primary data from the selected respondents. The study was limited only to those personnel who had completed the different levels of the Incident Command System, wherein out of 207 personnel, only 82 had training on the different levels across the twelve municipalities of the province, to gather the needed information during the collection of the data in the form of a questionnaire. The study utilized a descriptive survey research design and employed a pre-tested questionnaire to collect primary data. A total of 82 BFP personnel participated in the study, drawn from 12 municipal fire stations and the BFP Provincial Office in Camarines Norte, including Basud, Daet, Mercedes, San Lorenzo, San Vicente, Talisay, Vinzons, Labo, Paracale, Jose Panganiban, Capalonga, and Sta. Elena Fire Stations, as well as the Office of the Provincial Fire Marshal. In terms of operational capabilities, BFP personnel were rated "very much capable" in organizational management ($M = 4.31$), information dissemination ($M = 4.40$), and responsiveness ($M = 4.29$). However, resource planning obtained a slightly lower rating of "capable" ($M = 4.18$), indicating room for improvement. Based on these results, an intervention plan was developed to address identified gaps, particularly in workforce and equipment allocation, equipment maintenance, training frequency, public awareness activities, and governance-related



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constraints. Across the four operational capability domains, the three lowest-rated indicators were related to: (1) the adequacy and readiness of firefighting and rescue equipment, (2) the frequency and accessibility of specialized disaster response and Incident Command System (ICS) trainings, and (3) the reach and effectiveness of disaster preparedness information dissemination to vulnerable communities. These priority gaps highlight the areas where improvement efforts should be directed most urgently.

KEYWORDS

Operational capabilities; disaster emergency management; resource planning; responsiveness; organizational management; and information dissemination.

1. Introduction

In a world where various occurrences happen every day. Even within the household, life cannot be taken for granted. There is still a chance of danger and environmental disruption, most likely from natural causes. As the phrase “the revenge of nature” suggests, unanticipated ecological events such as global climate change and natural disasters will undoubtedly occur. Various disasters have befallen not just the surface of the world but also its most inaccessible regions since the dawn of time. Humanity has used the opportunity to document and learn about these natural occurrences to mitigate any potential harm they may cause, as people now reside in all habitable regions of Earth (Bautista, 2013).

Rapid urbanization and worsening climate change consequences are making disasters more complex and unpredictable. Nations across the globe face inevitable risks from both artificial and natural hazards, threatening lives, property, and overall socio-economic development. Protecting citizens from the impacts of such disasters remains a fundamental responsibility of every national government. Governments must develop and implement efficient emergency and disaster management systems to address these escalating issues. The success of relief efforts is greatly influenced by the management of disaster and emergency resources (DEMRS), which is essential to disaster and emergency response. To meet the needs arising from emergencies and disasters, it includes procedures for identifying, obtaining, allocating, and distributing resources. Effective disaster management is made more difficult by the unpredictability, extensive destruction, and dynamic changes in disasters.

This process is especially vulnerable to numerous uncontrollable factors, including organizational limitations, human dynamics, logistical constraints, information flow, and environmental conditions, which can severely impede the progress of emergency response efforts. Identifying the critical elements affecting DEMRS’ effective operation is essential to meeting the demands of emergency and disaster operations across government agencies and improving the coordination of disaster relief resources. (Zhang & Lee, 2024).

According to the International Federation of Red Cross (IFRC), a disaster is any sudden, catastrophic event that significantly impairs a civilization or community’s capacity to function and results in losses of people, property, money, or the environment that are greater than what the community or society can reasonably be expected to bear with its limited resources. Disasters can be human-caused, even though they are typically caused by nature. Typhoons, earthquakes, tsunamis, and volcanic eruptions are examples of natural disasters; on the other hand, war is one catastrophic artificial disaster. One calamity that can result from the two previously mentioned circumstances is fire.

The Philippines has unquestionably experienced numerous natural and man-made disasters, including typhoons. The Philippines, like its neighbors in Southeast Asia, is contending with a range of natural disasters, including devastating forest fires, volcanic eruptions, landslides, tsunamis, typhoons, earthquakes, and underground ruptures. The increased susceptibility of our society to property and life loss is also a result of artificial calamities. Among the most important organizations responsible for disaster response is the Bureau of Fire Protection (BFP), which plays a critical and multifaceted role in safeguarding lives and property during emergencies. Beyond its core mandate of fire suppression, the BFP is actively engaged in a wide range of disaster-related operations, including search and rescue, evacuation assistance, emergency medical services, and hazardous mate-

rials response. Its personnel are often among the first to arrive at the scene of natural disasters such as typhoons, earthquakes, and floods, making them essential frontliners in life-saving missions.

The Bureau of Fire Protection's main objectives are to prevent fires, extinguish fires, investigate arson, enforce the RA 9514 fire code, and respond to emergencies and artificial and natural disasters. Given the regularity of natural disasters and the threat that criminal activity and other disturbances pose to peace and order, both the public and private sectors must work together. Therefore, under E.O. 56, President Rodrigo R. Duterte formalized the usage of 911 as the Nationwide Emergency Hotline Number. Responders to 911 include the BFP, PNP, and other Major Support. serving as the primary organization for carrying out fire suppression operations and offering emergency medical care, protecting the public from dangerous chemicals, and providing technological search and rescue services.

The enactment of Republic Act 10121, or the Philippine Disaster Risk Reduction and Management Act of 2010, marked a significant shift from a reactive disaster preparedness and response approach to a more holistic Disaster Risk Reduction and Management (DRRM) strategy. The National DRRM Plan now acts as a strategic framework that fosters inclusive growth and sustainable development by building community resilience, empowering vulnerable sectors, and maximizing opportunities for disaster mitigation to protect public safety and well-being. Draft bills were prepared to establish the Department of Disaster Resiliency; one of the bills mentions moving the BFP to the new department. With 22,000 well-trained professionals, BFP's presence is essential to DDR's ability to provide LGUs with quick incremental capacity and surge capacity, given its national and regional organization, including stations, personnel, and assets across 1,400 LGUs. In particular, in disasters involving collapsed structures, the DDR will continuously train and upgrade BFP personnel's skills in search and rescue operations and in the handling of deceased and missing individuals.

Winter (2003) describes an operational capability as a broad routine or set of activities that, when combined with its implementing input flows, provides management with a range of alternatives for producing important outputs of a specific kind. According to Newey and Zahra (2009), operating capabilities enable a company to perform its core operational functions effectively. A company with operational capability may sustain its current products and services for the same client base by continuously performing the same activity using the same methods at the same scale (Helfat & Winter, 2011). Maintaining and enhancing corporate performance requires operational competence (Gurkan, 2015).

Moreover, in this context, operational capabilities refer to the operational procedures, practices, and competencies that BFP personnel acquire to manage and address situations effectively. These capacities include the coordination, communication, and decision-making procedures that guarantee a prompt and efficient response, as well as the technical and tactical skills needed in emergencies.

Furthermore, disaster emergency management is a crucial component of public safety that requires specific training, quick thinking, and efficient inter-agency coordination. A major player in this ecosystem is the Bureau of Fire Protection (BFP), which is primarily responsible for rescue operations, public safety, and catastrophe mitigation. Thus, the foundation of an efficient disaster response is the operational competencies of BFP personnel. Additionally, the operational skills of the BFP's staff play a critical role in the organization's efficacy during disasters. In these scenarios, the agency's capacity to meet the needs of the impacted area is being evaluated.

At present, the Bureau of Fire Protection (BFP) in Camarines Norte faces several challenges in its operational capabilities for disaster emergency management. These challenges may stem from internal issues such as limited resources, including personnel, equipment, and vehicles, which hinders their ability to respond effectively to disasters, inadequate training on disaster response and emergency management, which can lead to a lack of confidence and competence in responding to disasters, as well as external factors like poor coordination with other agencies, lack of community support, or infrastructure constraints. Based on the data given by the Bureau of Fire Protection Office of the Provincial Fire Marshall in Camarines Norte, Fire officers have different specialized training, particularly in the Incident Command System wherein the Disaster Emergency Management System was incorporated, it will only have a limited number of personnel that completed the five (5)

levels of Incident Command System Course such as Basic Course that only has 82 trained personnel; Integrated Planning with 68 trained personnel; Position Course with 45 trained personnel; All hazard Incident Management Team with 31 trained personnel; lastly Training for Instructors with only 15 trained personnel, In totality, there are 82 trained personnel for all types of disaster emergency management across the twelve municipal fire stations in the province in case of emergencies.

To help the Bureau of Fire Protection with future planning, training, and policy development, this study was conducted to ascertain the Bureau's operational capabilities in the province with reference to Disaster Emergency Management. The growing frequency and intensity of disasters, which put emergency response systems to the test, also make this study necessary. Improving disaster management results requires evaluating and strengthening BFP staff operating capabilities.

This study aims to close this gap by assessing the operational capabilities of BFP personnel, identifying areas of strength and improvement, and offering suggestions to enhance their efficacy in disaster emergency management. Additionally, it will emphasize the significance of having emergency response teams that are properly trained and equipped.

2. Methods

This study used a quantitative research design and a descriptive approach. According to Bhat (2019), descriptive research is a method that explains the features of the population or phenomenon under study.

The design was used to generate data on the personnel profile of the Bureau of Fire Protection, Camarines Norte, covering age, sex, civil status, educational attainment, length of service, and disaster response training. The study also examined the respondents' level of operational capabilities in disaster emergency management for the Bureau of Fire Protection in the province of Camarines Norte, as well as the challenges or problems encountered by the Bureau of Fire Protection personnel in the province. At the same time, a correlational design was employed to assess relationships between respondents' profiles and the level of operational capabilities in disaster emergency management, including resource planning, organizational management, responsiveness, and information dissemination.

The respondents of the study consisted of 82 personnel from the Bureau of Fire Protection (BFP) Camarines Norte, representing the 12 Municipal Fire Stations in the province and the Office of the Provincial Fire Marshal. The number of respondents was obtained from the Administrative Branch and Personnel Section of the Office of the Provincial Fire Marshal, Camarines Norte. The study employed purposive sampling, specifically targeting BFP personnel who had completed Incident Command System (ICS) training and were actively assigned to operational or response-related functions within their respective fire stations. The inclusion criteria required respondents to: (1) be officially assigned to any municipal fire station in Camarines Norte or the Provincial Fire Marshal's Office, and (2) have undergone ICS training recognized by BFP or relevant disaster management authorities. This approach ensured that participants possessed the necessary knowledge and experience relevant to the study's focus on ICS implementation and operational readiness. However, because purposive sampling was used and participation was limited to ICS-trained personnel, the study's findings primarily reflect the perspectives and experiences of trained responders. As such, the results may not be fully generalizable to all BFP personnel in Camarines Norte, particularly those who have not undergone ICS training or who are assigned primarily to administrative roles.

The respondents of this study were the Bureau of Fire Protection personnel from various fire stations across the 12 municipalities of Camarines Norte, and the Office of the Provincial Fire Marshal, based on data as of September 2024. The respondents of the study were composed of personnel from different fire stations of the 12 municipalities of Camarines Norte as well as the Office of the Provincial Fire Marshal who underwent the various levels of Incident Command System Training: 4 from Basud Fire Station, 7 from Capalonga Fire Station, 20 from Daet Fire Station, 5 from Jose Panganiban Fire Station, 7 from Labo Fire Station, 5 from Mercedes Fire Station, 4 from Paracale Fire Station, 5 from San Lorenzo Ruiz Fire Station, 3 from San Vicente Fire Station, 4 from Sta. Elena Fire Station,

4 from Talisay Fire Station, 3 from Vinzons Fire Station, and 11 from the Office of the Provincial Fire Marshal. The respondents were personnel who had completed the various levels of Incident Command System training, as they possessed the skills and background necessary to respond to the survey, which aimed to ascertain operational capabilities in disaster emergency management and any difficulties or issues faced.

A researcher-made structured survey questionnaire was the main instrument used to gather data for the study; respondents had easy access to a printed copy, and those who preferred to reply online were provided with an online survey form. The survey findings were subsequently combined. Based on the information needed for the analysis, the research questionnaires were divided into two (2) components.

The first part gathered the respondents' demographic profile, including age, sex, civil status, educational attainment, length of service, and relevant training attended. The second part measured the level of operational capabilities in disaster emergency management of the Bureau of Fire Protection (BFP) in the Province of Camarines Norte, focusing on four domains: resource planning, organizational management, responsiveness, and information dissemination. The items in the second part were rated using a five-point Likert scale with the following anchors: 1 – Not Capable at all, 2 – Slightly Capable, 3 – Somewhat Capable, 4 – Capable, and 5 – Very Much Capable. Domain scores were computed using the mean item responses within each domain (item averaging) to represent respondents' perceived level of capability. In cases of missing responses, the domain mean was computed only when the respondent answered the majority of the items within that domain; otherwise, the response was treated as missing for that domain. To ensure the instrument's validity, the researcher conducted expert validation. Selected experts were formally invited via a letter explaining the purpose and significance of the validation. They were asked to evaluate the questionnaire for clarity, relevance, and alignment with the study objectives. After incorporating the experts' recommendations, a pilot test (dry run) was conducted among 20 personnel from the Naga City Fire Station who had undergone different levels of Incident Command System (ICS) training. Printed copies of the survey questionnaire were distributed during the pilot testing. The reliability of the instrument was assessed using Cronbach's Alpha. The results showed reliability coefficients of 0.916 for resource planning, 0.920 for organizational management, 0.927 for responsiveness, and 0.891 for information dissemination, indicating high internal consistency of the instrument. For interpretation, the following scale was used: 4.21–5.00 (Very Much Capable), 3.41–4.20 (Capable), 2.61–3.40 (Somewhat Capable), 1.81–2.60 (Slightly Capable), and 1.00–1.80 (Not Capable at all).

The survey questionnaire was an essential part of data collection in this study. The researcher prepared the questionnaire and submitted it to the thesis advisory committee for improvements and further enhancements. After the appropriate revisions, the survey questionnaire was finalized. The survey questionnaires were distributed to the 12 Municipal Fire Stations of Camarines Norte, including the Office of the Provincial Fire Marshal. A scanned copy of the letter was forwarded to the respondents via Facebook Messenger to introduce the researcher and the purpose of the survey. Google Forms was used for its user-friendly interface, cross-device accessibility, and seamless integration with other Google services, making it an efficient tool for data collection. It was conducted in the 2nd week of April 2025, and the data were retrieved as soon as the respondents were done answering the questionnaire. All information and data were solely intended for this study alone and treated with utmost confidentiality.

The researcher systematically organized the collected data and collaborated with a statistician for accurate computation, analysis, and interpretation. Before data collection, participants were thoroughly informed about the study's objectives and the specific purpose of the survey. They were assured that all personal information would be handled with utmost confidentiality, adhering strictly to the principles of transparency, legitimate purpose, and proportionality as mandated by the Data Privacy Act of 2012 (Republic Act No. 10173) and its Implementing Rules and Regulations. Participation was entirely voluntary, and respondents were encouraged to complete the survey during their free time to ensure it did not interfere with their professional responsibilities.

To convert the data gathered into meaningful findings and conclusions, several statistical tools and techniques were employed. Frequency and percentage were used to describe the demographic

profile of respondents from the Bureau of Fire Protection (BFP) Camarines Norte, including age, sex, civil status, educational attainment, length of service, and disaster response training. These descriptive statistics provided a clear summary of the distribution of the respondents' characteristics. To determine the level of operational capabilities in disaster emergency management, the responses to the Likert-scale items were analyzed using the weighted mean. This statistical measure was used to summarize responses across indicators and domains, enabling the researcher to assess the relative level of capability in resource planning, organizational management, responsiveness, and information dissemination.

3. Results

The following are the analysis, presentation, and interpretation of data about operational capabilities in disaster emergency management of Bureau of Fire Protection personnel in Camarines Norte. Through tabular presentations and in-depth conversations, the researcher organized the data.

3.1. Profile of the Respondents

3.1.1. Age

The respondents' age distribution is seen in Table 1. It shows that, at 38 or 46 percent of the overall population, the majority of responders are between the ages of 35 and 44; while the lowest number of respondents is in the 45 and above age bracket, with a frequency of 13 or 16 percent of the total population.

Table 1. Age Profile of the Respondents.

Age	Frequency	Percentage (%)
25-34	31	38
35-44	38	46
45 and above	13	16
Total	82	100

3.1.2. Gender

The respondents' sex profile is seen in Table 2. At 59 or 72 percent of the population, men make up the majority of responders, while women make up the smallest percentage, at 23 or 28 percent.

Table 2. Gender Profile of the Respondents.

Sex	Frequency	Percentage (%)
Male	59	72
Female	23	28
Total	82	100

3.1.3. Civil Status

Table 3. Profile of the Respondents in terms of Civil Status.

Civil Status	Frequency	Percentage (%)
Single	23	28
Married	59	72
Total	82	100

3.1.4. Educational Attainment

The respondents' level of education is shown in Table 4. With a frequency of 66 or 81 percent of the population, it demonstrated that the majority of respondents are college graduates; the lowest number of respondents have a doctorate, with units and a doctorate, each with a frequency of 1 percent of the total population.

Table 4. Age Profile of the Respondents.

Educational Attainment	Frequency	Percentage (%)
College Graduate	66	81
Masters (with Units)	8	10
Master's Degree Graduate	4	5
Doctorate (with units)	1	1
Doctorate Degree Graduate	1	1
Others	2	2
Total	82	100

3.1.5. Length of Service

The distribution of BFP personnel in Camarines Norte by duration of service is displayed in Table 5. Most responders have served for 6 to 10 years, indicating that more than half of the workforce is relatively experienced, likely possessing both field exposure and operational competency.

Table 5. Profile of the Respondents in terms of Length of Service.

Years	Frequency	Percentage (%)
1-5	11	14
6-10	43	52
11-15	10	12
16-20	7	9
21-above	11	13
Total	82	100

3.1.6. Relevant Trainings Attended

Table 6 presents the number of relevant trainings attended by BFP personnel in Camarines Norte. The data shows that most respondents have attended 1 to 3 trainings (42% with a frequency of 35). Meanwhile, only a small proportion of personnel have attended 7 to 9 trainings (9 percent) and 10 or more trainings (9 percent), with 7 in each bracket.

Table 6. Profile of the Respondents in terms of the Number of Relevant.

Number of Relevant Trainings	Frequency	Percentage (%)
1-3	35	42
4-6	33	40
7-9	7	9
10-above	7	9
Total	82	100

3.2. Level of operational capabilities in disaster emergency management of the Bureau of Fire Protection

3.2.1. Resource Planning

Table 7 shows the respondents' operational capabilities in disaster emergency management of the Bureau of Fire Protection, with a manifest capability in resource planning, yielding an overall weighted mean of 4.18. The result showed that the highest and second-highest weighted means are indicators 5 "Can coordinate with other agencies for resource augmentation" and 10 "Can conduct post-disaster resource evaluation and assessment", with weighted means of 4.44 and 4.28, respectively, and interpreted as very much capable. The two lowest weighted means are 2 "Can allocate manpower and equipment for emergency operations" and 3 "Can maintain equipment in operational condition and readiness for immediate deployment during disaster", with 3.91 and 4.04 weighted means, respectively, or interpreted as capable.

Table 7. Level of Operational Capabilities in Disaster Emergency Management in terms of Resource Planning.

Indicators	Weighted Mean	Interpretation
Can assess available resources for disaster response	4.21	VMC
Can allocate workforce and equipment for emergency operations	3.91	C
Can maintain equipment in operational condition and readiness for immediate deployment during a disaster	4.04	C
Can rapidly deploy resources in response to various types of disasters	4.10	C
Can coordinate with other agencies for resource augmentation	4.44	VMC
Can develop contingency plans for resource mobilization	4.24	VMC
Can manage communication systems for resource coordination	4.13	C
Can manage evacuation procedures during disasters	4.20	VMC
Can conduct risk assessments to determine resource needs	4.27	VMC
Can conduct post-disaster resource evaluation and assessment	4.28	VMC
Overall Weighted Mean	4.18	C

Rating Scale: Descriptive Interpretation: 4.20-5.00 - Very Much Capable (VMC); 3.40-4.19 - Capable (C); 2.60-3.39 - Somewhat Capable (SoC); 1.80-2.59 - Slightly Capable (SiC); 1.00-1.79 - Not Capable at All (NCAA)

3.2.2. Organizational Management

Table 8 shows the respondents' operational capabilities in disaster emergency management of the Bureau of Fire Protection, with very capable in organizational management, an overall weighted mean of 4.31. The result showed that the highest and second highest weighted means are indicators 3 "Ensures that all team members understand their roles during disaster responses" and 8 "Works with the teams within the organization effectively towards common goals", with weighted means of 4.46 and 4.39, respectively, and interpreted as very much capable. The two lowest weighted means are 9 "Mobilizes resources and support from all sectors of society, forming a collective effort" and 10 "Transfers timely and accurate information between the organization and stakeholders", with 4.21 and 4.24 weighted means, respectively, or interpreted as very much capable.

Table 8. Level of Operational Capabilities in Disaster Emergency Management in terms of Organizational Management.

Indicators	Weighted Mean	Interpretation
Demonstrates decision-making in disaster situations, ensuring timely and appropriate action	4.28	VMC
Manages its personnel and resources (e.g., fire trucks, medical equipment) to maximize disaster response efforts	4.29	VMC
Ensures that all team members understand their roles during disaster responses	4.46	VMC
Clears communication and information flow among personnel, other agencies, and the public during disaster events	4.30	VMC
Communicates disaster management strategies effectively to all personnel	4.29	VMC
Adapts to changing disaster conditions and effectively manages unforeseen challenges during emergencies	4.30	VMC
Commands and dispatches teams and personnel at all levels, ensuring coordinated response activities.	4.28	VMC
Works with the teams within the organization effectively towards common goals	4.39	VMC
Mobilizes resources and support from all sectors of society, forming a collective effort	4.21	VMC
Transfers timely and accurate information between the organization and stakeholders	4.24	VMC
Overall Weighted Mean	4.31	VMC

Rating Scale: Descriptive Interpretation: 4.20-5.00 - Very Much Capable (VMC); 3.40-4.19 - Capable (C); 2.60-3.39 - Somewhat Capable (SoC); 1.80-2.59 - Slightly Capable (SIC); 1.00-1.79 - Not Capable at All (NCAA)

3.2.3. Responsiveness

Table 9 shows the respondents' operational capabilities in disaster emergency management of the Bureau of Fire Protection, with a very capable rating in responsiveness, yielding an overall weighted mean of 4.29. The result showed that the highest and second highest weighted mean are indicators 4 "The team is capable of coordinating among different emergency response units (e.g., PNP, MDRR-MO, PRC)" and 1 "The emergency response team arrives at the scene within the expected time frame", with weighted mean of 4.52 and 4.40, respectively, and interpreted as very much capable. The two lowest weighted means are 8, "The emergency response team is capable of maintaining equipment and ensuring its availability when needed," and 10, "The team is capable of conducting regular training exercises for emergency preparedness," with 4.05 and 4.04 weighted means, respectively, or interpreted as capable.

Table 9. Level of Operational Capabilities in Disaster Emergency Management in terms of Responsiveness.

Indicators	Weighted Mean	Interpretation
The emergency response team arrives at the scene within the expected time frame	4.40	VMC
The initial assessment of the emergency is conducted promptly and accurately	4.37	VMC
The emergency response team is capable of communicating clearly and effectively with affected individuals	4.34	VMC
The team is capable of coordinating among different emergency response units (e.g., PNP, MDRRMO, PRC)	4.52	VMC
The emergency response team is well-trained and capable of handling various types of emergencies.	4.26	VMC
The emergency response team is capable of providing timely updates to the public about the situation	4.27	VMC
The team is capable of ensuring safety measures to protect both the responders and the public during an emergency	4.39	VMC

The emergency response team is capable of maintaining equipment and ensuring its availability when needed	4.05	C
The team is capable of solving unexpected problems that arise during the emergency response	4.24	VMC
The team is capable of conducting regular training exercises for emergency preparedness	4.04	C
Overall Weighted Mean	4.29	VMC

Rating Scale: Descriptive Interpretation: 4.20-5.00 - Very Much Capable (VMC); 3.40-4.19 - Capable (C); 2.60-3.39 - Somewhat Capable (SoC); 1.80-2.59 - Slightly Capable (SlC); 1.00-1.79 - Not Capable at All (NCAA)

3.2.4. Information Dissemination

Table 10 shows the respondents’ operational capabilities in disaster emergency management of the Bureau of Fire Protection, with very capable in information dissemination, an overall weighted mean of 4.40. The result showed that the two highest-weighted means are indicators 1 “Provides information on disaster safety measures to the public through public address or bandillo” and 3 “Collaborates with other agencies to disseminate disaster information”, both with a weighted mean of 4.49 and interpreted as very capable. The two lowest weighted means are 5 “Conducts regular radio and TV guesting/program” and 9 “Ensures that vulnerable populations (e.g., the elderly, children, persons with disabilities) receive the necessary information during a disaster”, with both weighted means of 4.29, respectively, or interpreted as very much capable.

Table 10. Level of Operational Capabilities in Disaster Emergency Management in terms of Information Dissemination.

Indicators	Weighted Mean	Interpretation
Provides information on disaster safety measures to the public through public address or bandillo	4.49	VMC
Offers educational materials that are clear and understandable when conveying disaster information	4.44	VMC
Collaborates with other agencies to disseminate disaster information	4.49	VMC
Provides information on disaster safety measures and prevention through (e.g., websites, social media, pamphlets, books, magazines, and posters)	4.39	VMC
Conducts regular radio and Television guesting /program	4.29	VMC
Provides timely updates and follow-up information during ongoing disaster events	4.33	VMC
Conducts regular drills and simulations to improve their information dissemination during disasters	4.43	VMC
Ensures that the public is well-informed about evacuation procedures and safety measures prior to a disaster	4.44	VMC
Ensures that vulnerable populations (e.g., older people, children, persons with disabilities) receive the necessary information during a disaster	4.29	VMC
Engages in public education campaigns to increase awareness about disaster risks and safety measures	4.44	VMC
Overall Weighted Mean	4.40	VMC

Rating Scale: Descriptive Interpretation: 4.20-5.00 - Very Much Capable (VMC); 3.40-4.19 - Capable (C); 2.60-3.39 - Somewhat Capable (SoC); 1.80-2.59 - Slightly Capable (SlC); 1.00-1.79 - Not Capable at All (NCAA)

3.3. Proposed Intervention Plan to Improve the Operational Capabilities in Disaster Emergency Management of the Bureau of Fire Protection Personnel

The formulation of the intervention matrix was anchored on the key findings and statistical results presented in Tables 7 to 11 of the study, which assessed the operational capabilities of the Bureau of Fire Protection (BFP) personnel in Camarines Norte. The intervention matrix strategically addresses the lowest-scoring indicators under the four core domains of operational capability, resource planning, organizational management, responsiveness, and information dissemination. The data

revealed critical weaknesses in equipment availability and maintenance, insufficient distribution of personnel, irregularities in training programs, and limited reach of public information campaigns, especially toward marginalized and high-risk communities. These gaps hinder the Bureau of Fire Protection (BFP) personnel's ability to deliver timely and effective disaster emergency responses. In response, the updated intervention matrix outlines targeted, actionable strategies to address these weaknesses and build a more responsive and resilient BFP system.

In resource planning, interventions now include equipment modernization, improved workforce deployment policies, and digitized systems for logistical coordination and forecasting. These aim to directly address the lack of updated tools and the uneven assignment of personnel across municipalities. In terms of organizational management, the matrix incorporates the development of career development pathways, linking personnel promotion to the attainment of postgraduate degrees. This incentivizes further education and supports long-term institutional capacity-building.

Responsiveness is improved through more frequent ICS-based trainings, enhanced deployment mapping, and proactive integration with inter-agency efforts via simulated disaster drills. Meanwhile, the area of information dissemination is strengthened through the deployment of digital communication platforms, training on disaster reporting, and targeted community outreach initiatives, especially in barangays with previously poor access to preparedness information. Additionally, the matrix is informed by the top challenges cited by BFP personnel. Internally, these include workforce and rescue equipment shortages; externally, concerns focus on inadequate financial resources, political interference, and health risks to responders. Each strategy in the matrix corresponds to these concerns. For example, proposals for national-level funding support for new equipment and training are explicitly stated. Governance reforms, such as clearer protocols for LGU coordination and inclusivity in staffing, aim to reduce bureaucratic and political inefficiencies.

Internally, workforce shortages are most notably reflected in the disproportionate ratio of firefighters to the population they serve. According to recommended standards by International Fire Safety Organizations, there should be at least 1 firefighter per 2,000 people; however, in Camarines Norte, the current allocation falls significantly below this benchmark. This staffing gap places immense pressure on existing personnel, particularly during large-scale emergencies, when multiple locations demand simultaneous responses. By capturing this disparity in the intervention matrix, the discussion emphasizes the urgent need for increased recruitment, strategic deployment, and policy support to ensure adequate fire service coverage across the province. This situation also highlights the necessity for sustained funding and resources.

Importantly, the matrix also integrates the demographic data collected in the profiling phase (SOP 1), particularly the high rate of college-level education, but low participation in formal training programs. This gap is addressed through a dual strategy of targeted training and recognition of postgraduate qualifications in promotions, ensuring that educational attainment translates into practical professional growth within the organization.

Limited personnel per station and the lack of trained individuals in the Incident Command System (ICS) and disaster response are critical concerns that demand immediate attention. Many BFP fire stations in Camarines Norte operate with only a handful of staff, which severely limits their capacity to respond effectively to multiple or large-scale emergencies.

Additionally, without proper ICS training, a framework essential for coordinated and efficient disaster management, personnel may struggle with decision-making, role delegation, and inter-agency coordination during complex incidents. These limitations increase operational risks, delay response times, and compromise the safety of both responders and the public. As such, it is imperative to prioritize recruiting additional personnel and implementing comprehensive ICS and disaster-response training programs to build a more resilient, capable emergency workforce.

Table 11. Proposed Intervention Matrix to Improve the Operational Capability in Disaster Emergency Management of the Bureau of Fire Protection Personnel

Challenges Addressed	Type	Proposed Intervention Strategies	Responsible Office	Expected Outcome	Time Frame
1. Lack of trained personnel on ICS and disaster response	Internal	Institutionalize regular ICS trainings and refresher courses Conduct quarterly training on ICS Levels I–V	BFP, SRF, Philippine Public Safety Academy (PPSA)	Increase in certified and skilled personnel	Q3 2025 and ongoing
2. Limited number of personnel per station	Internal	Implement a manpower forecasting and deployment optimization plan Review personnel profiles, length of service, and municipal demand	BFP HRMS, Provincial Fire Marshal Office	Improved resource allocation and workload balance	Q3 2025 and ongoing
3. Poor coordination with other agencies	External	Strengthen inter-agency coordination through local DRRM councils Conduct joint simulations and MOUs with LGUs, PNP, LDRRMO, and PRC	BFP, LGUs, DRRMO	Streamlined disaster response collaboration	Q4 2025 onward
4. Limited community awareness and involvement	External	Launch BFP–LGU Community Preparedness Program Community outreach, barangay forums, fire and disaster drills	BFP, LGUs, Barangay Units	Higher public preparedness and safety	Q4 2025 onward
5. Outdated or insufficient equipment and PPE	Internal	Propose equipment modernization and additional procurement Inventory audit; Submit proposal to BFP Regional Office	BFP Logistics Officer	Updated and sufficient disaster response tools	Q4 2025 onward
6. Low resource planning and information dissemination score	Internal	Implement digital operations dashboard and communication systems Train on disaster reporting, install ICT infrastructure	BFP PIS Team, LGU DRRMO	More efficient data sharing and real-time coordination	Q4 2025 onward
7. Training gaps despite high college-level qualifications	Internal	Develop specialized career development tracks based on educational profile Offer scholarships, online courses, and external certifications	BFP HRMS, TESDA, CSC	Upskilled workforce aligned with qualifications.	Q1 2026 onward
8. Lack of gender/inclusivity considerations in staffing and deployment	Internal	Incorporate an inclusive staffing strategy in manpower planning Conduct of sensitivity training and equal opportunity deployment policy	BFP HRMS, GAD Committee	Gender-balanced, inclusive, and empowered workforce	Q1 2026 and ongoing

4. Discussion

The findings indicate that Bureau of Fire Protection (BFP) personnel in Camarines Norte generally perceive themselves as capable in disaster emergency management, particularly in coordination, teamwork, and community communication. Several indicators were rated as “capable” to “very much capable,” especially those related to inter-agency collaboration with LGUs, PNP, DOH, MDRRMO, PRC, and volunteer groups. This strong coordination capacity enhances operational reach, supports resource sharing, and facilitates more efficient disaster response, consistent with the collaborative approach promoted in the Philippine disaster risk reduction and management framework.

However, these high mean ratings should be interpreted cautiously, as perceived capability does not necessarily eliminate operational constraints. The results also reveal practical limitations in manpower allocation, equipment maintenance, and the frequency of training exercises. These constraints suggest that although personnel demonstrate competence and coordination skills, limitations in logistics, staffing distribution, and continuous capacity-building may still affect operational efficiency during large-scale emergencies.

High ratings in post-disaster evaluations and assessments indicate that BFP personnel regularly conduct after-action reviews and engage in organizational learning, which support improved planning and accountability. Similarly, strong ratings in organizational management reflect effective teamwork and clearly defined roles, suggesting a functional command structure that facilitates coordinated response operations.

Despite these strengths, resource planning and logistical readiness remain areas requiring improvement. Lower-rated indicators related to equipment availability, equipment maintenance, and manpower distribution highlight persistent operational challenges. These issues may be linked to resource limitations, funding constraints, and operational workload, which can restrict opportunities for equipment upgrades and regular training programs.

In terms of responsiveness, the BFP demonstrates strong perceived capability in rapid deployment and coordination with multiple response units, reinforcing its role as a key first responder. Nevertheless, the limited frequency of structured training exercises, particularly ICS-based drills and inter-agency simulations, underscores the need for more consistent capacity-building initiatives to sustain preparedness.

The domain of information dissemination also emerged as a relative strength, particularly through community-level communication methods such as bandillo and coordination with partner agencies. However, weaker performance in mass media engagement and communication strategies for vulnerable communities suggests the need to expand outreach through digital platforms and to adopt more inclusive disaster communication strategies.

Overall, while the results suggest that BFP Camarines Norte possesses a generally capable and coordinated workforce, the presence of operational constraints—particularly in equipment maintenance, manpower allocation, and training regularity—indicates that high capability ratings should be understood within the context of existing resource and logistical challenges. Addressing these gaps is essential to ensure that perceived capability is consistently translated into effective operational performance during actual disaster events.

5. Conclusions

Based on the study’s findings, it can be concluded that the Bureau of Fire Protection (BFP) personnel in Camarines Norte are largely male, middle-aged, experienced, and college-educated, reflecting a workforce that is physically capable, professionally mature, and intellectually prepared to handle disaster emergency operations. This demographic profile indicates a strong human resource foundation, as personnel possess the educational background and years of service necessary to respond effectively to emergencies. However, despite these strengths, the study revealed notable gaps in training frequency and the sufficiency of operational resources. Limited access to advanced and specialized training programs, together with constraints in equipment availability and manpower

distribution, may hinder the full utilization of personnel competencies and reduce preparedness for complex and large-scale disasters. These findings emphasize the need for more consistent capacity-building initiatives and sustained investment in both human and material resources to maximize the potential of BFP personnel.

Furthermore, the operational capabilities of BFP personnel were generally high across key functional areas, demonstrating the bureau's effectiveness in disaster emergency management. Information dissemination emerged as the strongest capability, indicating that personnel are proficient in communicating disaster-related information to the public and coordinating with partner agencies to promote preparedness and timely response. This capability contributes to stronger community awareness and supports effective disaster risk reduction efforts. In contrast, resource planning was identified as the weakest domain, highlighting persistent challenges in manpower deployment, equipment allocation, and logistical preparedness. Strengthening planning systems, modernizing logistics processes, and adopting more data-driven resource management approaches are therefore essential to ensure that personnel and equipment are strategically positioned before, during, and after disaster events.

To operationalize these improvements, the study recommends several measurable implementation indicators to guide BFP management and monitoring efforts. First, capacity-building initiatives should include at least two specialized disaster response or ICS-based training activities per quarter to ensure continuous professional development and operational readiness. Second, BFP stations should maintain an equipment readiness rate of at least 90%, supported by regular maintenance checks and inventory monitoring to ensure that firefighting and rescue equipment remain fully functional during emergencies. Third, inter-agency disaster simulation drills should be conducted at least twice annually in coordination with local government units and partner response agencies to strengthen coordination and response efficiency. Finally, the implementation of the proposed intervention plan should be monitored through semi-annual performance reviews, focusing on training participation rates, equipment readiness levels, and operational response indicators. By establishing clear performance benchmarks and monitoring mechanisms, these recommendations aim to strengthen operational planning, improve resource allocation, and enhance the overall disaster emergency management capacity of BFP personnel in Camarines Norte.

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