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An Assessment of Internal and Community-Related Factors Associated with the Perceived Effectiveness of Front-Line Service Delivery of the Bureau of Fire Protection in Cabanatuan City

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Abstract

Fire protection services play a crucial role in safeguarding communities from fire hazards and emergency incidents. The effectiveness of these services depends not only on institutional capacity but also on community cooperation in fire prevention and disaster preparedness initiatives. This study assessed the internal and community-related factors associated with the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection (BFP) in Cabanatuan City, Philippines. A descriptive–comparative research design was employed involving 90 respondents composed of 34 BFP personnel and 56 community members. Data were collected through a structured questionnaire and analyzed using frequency, percentage, weighted mean, and independent samples *t*-test. Results indicated that internal organizational factors—such as personnel availability, adequacy of equipment and resources, training and professional development, operational procedures, and work environment—were perceived as effective, with an overall mean of 3.40. Community-related factors—including public awareness of fire safety programs, community participation, cooperation between the community and BFP personnel, and accessibility of services—were also assessed as effective, with an overall mean of 3.34. The independent samples *t*-test revealed no statistically significant difference between the perceptions of BFP personnel and community members regarding the effectiveness of front-line service delivery ($t = .62$, $p = .536$). The findings suggest that both institutional capacity and community engagement contribute to effective fire protection services. Strengthening manpower allocation, upgrading operational resources, and enhancing community fire safety programs may further improve emergency response capability and public safety outcomes.

Keywords: fire protection, emergency response, service delivery effectiveness, community engagement, public safety

Introduction

Fire incidents pose serious threats to public safety and property, particularly in rapidly urbanizing cities where increasing population density and infrastructure development elevate fire risks. Fire protection

agencies play a vital role in disaster risk reduction, emergency response, and public safety management. In the Philippines, the Bureau of Fire Protection (BFP) is mandated to enforce fire safety regulations, conduct rescue operations, and ensure effective emergency response during fire-related incidents.

Front-line service delivery is a critical component of emergency management because it represents the immediate response provided by firefighters during emergencies. Effective front-line service delivery ensures that fire incidents are addressed promptly, thereby minimizing property damage and loss of life. Studies emphasize that front-line services serve as the primary interface between emergency institutions and the communities they serve, highlighting the importance of efficient operational systems and well-trained personnel (Luthuli et al., 2024). Likewise, accessibility to fire protection services significantly influences response time and the overall effectiveness of disaster management (Chung et al., 2024).

Several internal organizational factors influence the effectiveness of fire protection services. These include manpower availability, operational procedures, adequacy of equipment and resources, personnel training, and workplace environment. Training programs have been shown to enhance firefighters' operational competence and emergency response performance (Edon & Nabe, 2025). Moreover, well-defined operational procedures and communication systems contribute to improved coordination and faster response during emergency situations (Steen-Tveit et al., 2024).

Community involvement also plays an essential role in strengthening fire protection services. Research suggests that community participation in fire prevention programs improves public awareness and supports emergency response initiatives (Pike et al., 2024). Cooperation between firefighters and local communities promotes disaster preparedness and strengthens public safety initiatives (Flora, 2025).

Despite the growing body of research on fire protection services, many studies focus primarily on organizational capacity while giving limited attention to the combined influence of internal institutional factors and community-related conditions on the effectiveness of front-line service delivery. Furthermore, few studies examine potential differences between the perceptions of fire service personnel and community members regarding the effectiveness of emergency response services.

Therefore, this study aimed to assess the internal and community-related factors associated with the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection in Cabanatuan City.

Methods

Research Design

This study employed a descriptive–comparative research design to examine the internal and community-related factors associated with the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection in Cabanatuan City. The descriptive component was used to assess the internal organizational and community-related factors affecting service delivery, while the comparative component was used to determine whether differences existed between the perceptions of BFP personnel and community members.

Participants

The respondents consisted of 90 participants, including 34 BFP personnel assigned to the Cabanatuan City Fire Station and 56 community members residing within the jurisdiction of Cabanatuan City. Participants were selected through purposive and enumeration sampling techniques to ensure that respondents had prior exposure to or interaction with BFP services.

Research Instrument

Data were collected using a structured survey questionnaire designed to measure the variables included in the study. The instrument consisted of sections covering the demographic characteristics of respondents, internal organizational factors, community-related factors, and perceived effectiveness of front-line service delivery.

Internal organizational factors included:

- personnel availability
- adequacy of equipment and resources
- training and professional development
- operational procedures and response systems
- work environment and personnel morale

Community-related factors included:

- public awareness of fire safety programs
- community participation in fire prevention activities
- cooperation between community members and BFP personnel
- accessibility of fire protection services

Data Analysis

The collected data were analyzed using both descriptive and inferential statistical techniques. Frequency and percentage were used to describe the demographic characteristics of respondents. Weighted mean was used to determine the level of assessment of internal organizational and community-related factors as well as the perceived effectiveness of front-line service delivery. An independent samples *t*-test was conducted to determine whether significant differences existed between the perceptions of BFP personnel and community members.

Results

The results of the study present the assessment of internal organizational factors and community-related factors associated with the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection in Cabanatuan City. The analysis also examined whether significant differences existed between the perceptions of Bureau of Fire Protection personnel and community members.

Internal Organizational Factors

Table 1 presents the assessment of internal organizational factors associated with front-line service delivery.

Table 1

Assessment of Internal Organizational Factors Associated with Front-Line Service Delivery

Indicator	Weighted Mean	Interpretation
Availability of Personnel	3.42	Effective
Adequacy of Equipment and Resources	3.38	Effective
Training and Professional Development	3.45	Effective

Operational Procedures and Response Systems	3.40	Effective
Work Environment and Personnel Morale	3.36	Effective
Overall Mean	**3.40**	**Effective**

The results indicate that internal organizational factors were generally assessed positively by respondents, with an overall mean of 3.40 interpreted as effective. Training and professional development obtained the highest mean score, suggesting that respondents perceive training programs as an important factor in improving operational readiness. Personnel availability and adequacy of equipment were also rated effective, indicating that the current operational resources support fire protection service delivery.

Community-Related Factors

Table 2

Assessment of Community-Related Factors Associated with Front-Line Service Delivery

Indicator	Weighted Mean	Interpretation
Public Awareness on Fire Safety Programs	3.35	Effective
Community Participation in Fire Prevention Activities	3.30	Effective
Cooperation Between Community and BFP Personnel	3.37	Effective
Accessibility of BFP Services	3.33	Effective
Overall Mean	**3.34**	**Effective**

The results show that community-related factors were also evaluated positively, with an overall mean of 3.34 interpreted as effective. Cooperation between community members and BFP personnel obtained the highest mean score, indicating strong collaboration between the agency and the community.

Difference in Perceptions Between Respondent Groups

Table 3

Independent Samples t-test on Perceived Effectiveness of Front-Line Service Delivery

Variable	Mean (BFP Personnel)	Mean (Community)	t-value	p-value	Interpretation
Perceived Effectiveness of Front-Line Service Delivery	3.41	3.38	0.62	0.536	Not Significant

The results indicate that there is no statistically significant difference between the perceptions of BFP personnel and community members regarding the effectiveness of front-line service delivery.

Discussion

The results of this study indicate that both internal organizational capacity and community participation contribute to the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection. Training and professional development emerged as one of the most influential factors affecting operational effectiveness. These findings are consistent with the study of Edon and Nabe (2025), which emphasized

that training programs enhance firefighters' competence, motivation, and emergency response capabilities. Operational procedures and response systems were also rated highly by respondents, indicating that structured protocols and communication systems support efficient emergency coordination. This aligns with Steen-Tveit et al. (2024), who noted that standard operating procedures play an essential role in improving coordination during disaster response.

Community-related factors also demonstrated strong influence on service delivery. High levels of public awareness and cooperation indicate effective community engagement in fire prevention initiatives. These results support the findings of Pike et al. (2024), who emphasized that community participation strengthens fire safety programs and disaster preparedness.

Furthermore, the results of the independent samples *t*-test indicated that there was no statistically significant difference between the perceptions of BFP personnel and community members regarding the effectiveness of front-line service delivery ($t = 0.62$, $p = .536$). This finding suggests that both groups share relatively similar assessments of the effectiveness of fire protection services provided in Cabanatuan City. The similarity in perceptions may reflect the visible presence and responsiveness of the Bureau of Fire Protection within the community, as well as the effectiveness of fire safety education and community engagement initiatives implemented by the agency.

Conclusion

This study assessed the internal and community-related factors associated with the perceived effectiveness of front-line service delivery of the Bureau of Fire Protection (BFP) in Cabanatuan City. The findings revealed that internal organizational factors such as personnel availability, adequacy of equipment and resources, training and professional development, operational procedures, and work environment were generally perceived as effective by the respondents. These factors contribute significantly to the operational readiness and performance of firefighters in responding to fire emergencies and related incidents.

Similarly, community-related factors including public awareness of fire safety programs, community participation in fire prevention activities, cooperation between community members and BFP personnel, and accessibility of fire protection services were also assessed as effective. These findings highlight the importance of collaboration between the Bureau of Fire Protection and the community in strengthening fire prevention and emergency response initiatives.

Furthermore, the results of the independent samples *t*-test indicated that there was no statistically significant difference between the perceptions of BFP personnel and community members regarding the effectiveness of front-line service delivery. This suggests that both groups share a similar assessment of the effectiveness of fire protection services provided in Cabanatuan City.

Overall, the study concludes that the Bureau of Fire Protection demonstrates effective front-line service delivery supported by both organizational capacity and community cooperation. Strengthening institutional resources and sustaining community engagement initiatives can further enhance the agency's ability to deliver efficient and responsive fire protection services.

Recommendations

1. Increase manpower allocation to improve operational readiness and reduce personnel workload.
2. Provide additional firefighting equipment and logistical resources to enhance response capability.
3. Continue regular training and professional development programs for firefighters.

4. Strengthen public awareness campaigns and fire safety education initiatives.
5. Enhance coordination between the Bureau of Fire Protection, local government units, and community organizations.
6. Implement the proposed advocacy program "Ligtas na Komunidad: Strengthening Community–BFP Partnership for Fire Safety and Emergency Preparedness."

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